THE

physical therapy REVIEW

Balance Training in Cerebral Palsy: Principles and Procedures — SPENCER

The Organization and Development of a Physical Medicine and Rehabilitation Service Within the Framework of a Welfare Agency — JOHNSON, LEVY, and MOHNEY

The Volunteer Helps Solve Group Mat Class Problems — FIELD

Case Report — DAVIES

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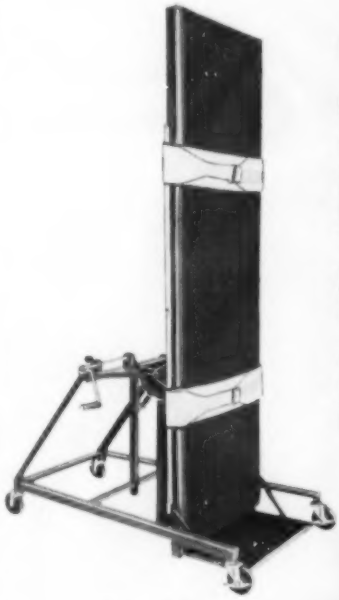

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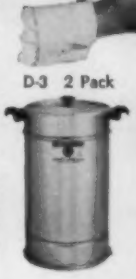

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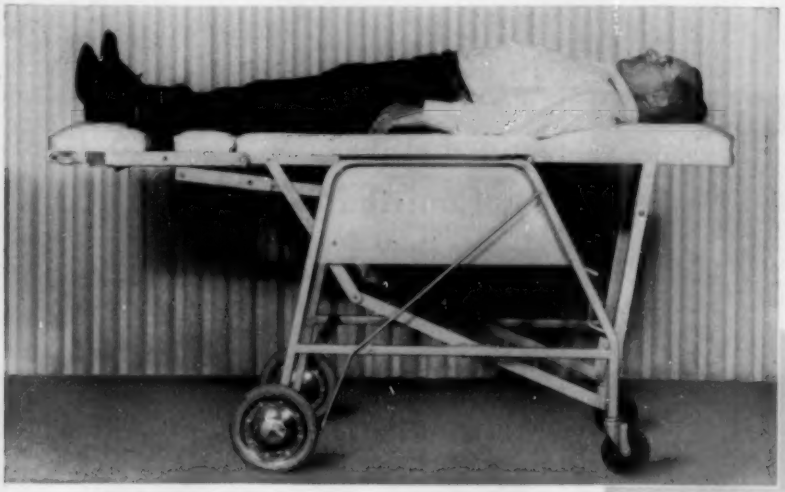

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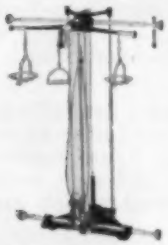

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Balance Training in Cerebral Palsy: Principles and Procedures

Helen G. Spencer, B.A.

Part I. General Considerations

Balance training is particularly important in the treatment of cerebral palsy. In strictly orthopedic disorders, weakness and deformity may interfere with balance; and with spinal cord lesions, spasticity will be an added difficulty. But when the motor centers of the brain are involved, there will also be impairment of neuromuscular coordination, of which a high degree is required for normal equilibrium. The therapist who attempts to teach a cerebral palsied paraplegic in locked long leg braces to climb stairs with one rail and one crutch will find that he is dealing with a different order of difficulty than that encountered in teaching a polio or spinal cord paraplegic, even with the kinesthetic loss of the latter. This coordinative balance loss is usual even in mild cases, although special testing may be necessary to reveal the difficulty.

Balance is maintained by the interplay of many finely graded muscle contractions which result from numerous automatic central nervous system reactions. In cerebral palsy, this complex chain of activity may be interfered with in many ways, among which are delayed maturation of the normal righting reflexes; the presence of abnormal involuntary tensions or movements, such as those produced by athetosis or by abnormal postural reflexes; loss of ability to produce swift, finely graded muscle contractions, as seen with spasticity and rigidity; loss of cerebellar coordination of muscle action; or loss of cerebellar equilibritory function. Mild incoordination may be hard to classify, appearing simply as clumsiness.

Although a conscious effort to stay upright is involved at times, the muscle contractions which maintain balance are largely automatic. If one must take thought to counteract a balance disturbance, the movement will come too late. Only the lightning swiftness of an automatic contraction can be quick enough.

Therefore, training must consist in the performance of activities which stimulate the balance reactions and ask from them a slightly higher level of performance than their accustomed one. These activities must be such that the person can maintain his balance, but only with some difficulty. If the performance is too easy, or if there is no success whatever, no new neuromuscular pathways are used and nothing is learned. When gradually increasing demands are made upon the balance mechanisms, their efficiency is raised until their full potential can

Supervising Physical Therapist, School for Cerebral Palsied Children, San Francisco.

This paper was prepared with the advice and assistance of the Physical Therapy Study Group in Cerebral Palsy of Metropolitan New Jersey and New York.

Submitted while the writer was Instructor in Physical Therapy, Columbia University College of Physicians and Surgeons, New York.

be used; this potential varies, of course, with the person. Since this training principle is universal (applying to normal persons as well as to the handicapped), the general approach to balance training is the same for all clinical classifications of cerebral palsy.

In addition to this central principle, there are other influences, physiological, psychological, and mechanical, of which therapists should be aware. Since vision, for instance, normally plays an important part in the regulation of equilibrium, scrupulous attention to the diagnosis and correction of visual defects may, in an occasional patient, result in improved balance.

The effect of fear on equilibrium is well known. The often cited example is the difference between the ease with which most of us could walk along a 6 inch plank laid on the ground, and the difficulty if the same plank were raised 20 feet in the air. It is to eliminate fear as well as to prevent injury that new activities are begun in protected situations. Beyond the protection provided by the physical therapist, additional safety guards may include a mat, a wall, parallel bars, a harness, a helmet, or knee-pads. As the patient gains in skill and self-confidence, the degree of protection may gradually be decreased. Rarely, if ever, should the patient be made to perform an activity while he is afraid, against his will, as this may simply confirm his fears. It may also arouse his resentment. Usually, encouragement and the gradual removal of protection with the patient's consent will lead to the best results.

To combat the purely psychological need for protection, activities may be introduced in which the patient is actually safe but may feel somewhat insecure because of unfamiliar surroundings, such as standing in a foot stabilizer alone in an open space. Likewise, some activities of daily living, such as walking and stair-climbing, should be practiced in as many sets of circumstances as possible, especially since some brain-injured persons have difficulty in transferring a learned activity from one environment to another.

The physical therapist should have clearly in mind the mechanical factors involved in balance. These are elementary, but worth reviewing. Stability in maintaining balance against disturbances has two main aspects: resistance to tipping and resistance to sideways slipping or rolling.

Resistance to tipping depends largely on the relationship of the center of gravity to the base of support. This relationship has a number of aspects, but the most important in therapy are these: to improve stability, broaden the base, or lower the center of gravity, or both. The influence of the broad base is easily understood when one remembers that for stability the center of gravity must be above the base. This relationship is naturally easier to maintain during disturbances if the area bounded by the supporting points is a large one. (It also follows that the nearer the center of gravity is to a point directly above the center of the base, the greater is the stability.) The wide stance adopted by some ataxics is the classical example of the automatic utilization of the broad base by the neuromuscular system. Foot appliances such as stabilizers, skis, and "duck shoes," and hand supports such as parallel bars and crutches improve balance by widening the base.

By lowering the center of gravity, on the other hand, we shorten the effective power arm through which disturbing forces are transmitted to the base. This is done with such devices as sandbags, or by the weighting of shoes, walkers, or crutches. Braces, especially short braces, lower the center of gravity, although this is not usually their primary purpose.

Stability in resisting sideways slipping (or rolling, with walkers) must also be considered and enough stability be provided for safety. The type of floor finish, nonslipping shoe sole material and crutch or cane tips, and the proper choice of a walker are often crucial. Weighting a walker or crutches will, in addition to other effects, increase friction of crutches against the floor, or of axle against wheel in walkers.

The value of braces in assisting balance in cerebral palsy will differ according to the individual. Braces, in addition to lowering the center of gravity, tend to limit movements which may upset balance; long leg braces may stabilize the patient in sitting as well as in standing. In standing, long leg braces with knees locked make the lower extremities into rigid pillars which with crutches give the patient four stable supports.

There is little that is physiological, however, about a rigidly supported standing balance, and thus little that is useful, unless the equilibrium can be carried over into voluntary movement. This very stability provided by braces prevents many of those constant adjustments of joint position, some great, some minute, which are the body's way of maintaining balance. Braces have other purposes, of course, beside aid in balance, but often their value in this respect can be determined only by trial. Often it is beneficial to give balance activities both in and out of braces.

Learning to use the hands for auxiliary support is a part of the training of many patients. Human

feet provide a tiny base compared to human height and all of us at times use our hands for support, utilizing reflexes inherited from four-footed ancestors. But the human forelimb is no longer efficient for continuous support. Moreover, central nervous system injury often results in a flexed posture of the elbow, with difficulty in maintaining the extension necessary for support. In general, therefore, at any stage in developing balance, leaning on the hand rather than pulling on the support needs to be encouraged. This is particularly true of the future crutch or cane walker. Since pulling is usually easier than pushing, the former may sometimes be allowed briefly for support when an activity is new. Often it is effective to use supports like sawhorse crutches—unstable when pulled on, but comparatively stable under a weight-bearing hand —or the patient may be asked to lean on the flat of his hand instead of grasping the support.

Recently, the Bobath approach to the treatment of cerebral palsy has emphasized the role of forelimb support in balance reactions. The patient is encouraged, for instance, to "catch himself" with first one hand and then the other as his sitting balance is repeatedly gently disturbed by the therapist, first from one side and then the other; or the patient is pushed forward from a knee stance so that his hips flex and elbows extend reflexly as he catches himself on his hands.

It seems likely that the patient learns more about body control when he uses an inanimate object for support than when he receives the support of another person, however skilled, and there are psychological disadvantages in dependence on personal aid. For some patients, of course, such as those with inability to maintain a dependable grasp, the support of an adult may be necessary at times during training.

In balance training the primary aim is the stimulation of the balance mechanisms, and their success in maintaining the body erect against the pull of gravity. Balance training should not be confused with training for "correct" posture. As long as there are no harmful ligamentous strains or excessive postural tensions, whatever postures allow the patient new success in maintaining balance are appropriate postures for balance training.

Walking a chalk line, for instance, is a good balance exercise under certain circumstances, but it is not suggested that this would be a desirable habitual gait. Likewise, in order to obtain any success at all in standing balance, a person may need to assume a flexed posture, which lowers his center of gravity and puts antigravity muscles on stretch; or he may need to lean forward in the foot stabilizer in what seems an exaggerated way, in order to take advantage of the anterior length of the stabilizer's base. If he is allowed to make a beginning in whatever posture he finds efficient, usually it will be possible for him to learn gradually to assume a more normal posture while maintaining balance.

If habitual postures (as opposed to postures used briefly for balance practice) assumed in sitting, standing, or walking appear to favor the development of deformities, the physical therapist should of course ask guidance of the physician as to whether such activities should be continued, postponed, or corrective support given.

Some orthopedic deformities present mechanical obstacles to the maintenance of balance. Surgery can sometimes effect a marked improvement in body mechanics, although it cannot restore normal coordination. The period of retraining after orthopedic surgery is sometimes lengthy, especially in older patients, since the neuromuscular system is then operating under new conditions.

Balance control can be of little value in everyday life without the ability to adjust to disturbances. For true independence, a balance reserve is needed; that is, the ability to maintain balance must be greater than is required to meet the demands of customary activities. "Disturbed balance activities" are one way of developing this reserve. They should be used at every stage of training possible, from head balance to free standing. Many of these activities can be presented as games, and they may be symmetrical or asymmetrical. Their number is limited only by the therapist's imagination. Some commonly used activities are these: clapping hands; moving hands with or without weights forward, sideward, backward, at varying rates of speed; playing ball; punching a bag or balloon; boxing; resisting a quick push; kicking a ball; bending, twisting, rocking, stooping; and crutch balance exercises.

To stimulate the patient's interest as well as to obtain progress records, the length of time during which balance can be maintained may be measured, preferably with a stopwatch. Other devices used for children are counting, singing as much as possible of a song, or performance by the patient of a simple hand activity like transferring as many beads as possible from one box to another while maintaining balance. A mirror is sometimes used to hold the patient's attention.

In general, the therapist will find, although his ingenuity may be taxed to keep the patient's in-

terest, it pays to make haste slowly in balance training. If an activity is so difficult that much assistance must be given for safety, it is well to consider whether there has been enough grounding in more elementary activities. For instance, when crutch-walking is excessively unstable, the patient may need more practice in easier phases of balance, such as standing activities with or without crutches, or even in disturbed sitting or kneeling balance.

The second section of this paper is a description of activities used in the progressive stages of balance training. In order to make this as practical and inclusive as possible, the writer consulted with a number of other physical therapists in this field. It is intended to cover only activities directly related to the training of the balance mechanisms. Activities for increasing strength have been omitted, although obviously a certain amount of strength is necessary for balance. Likewise, "postural correction" exercises, and those designed to develop muscular coordination not directly concerned with balance are not included, although these conceivably may indirectly result in improved balance.

This description of activities should not be considered a "system." Often the order in which activities were set down had to be arbitrary. Few patients will need, or will be able, to perform *all* of these activities. For some, the order of activities will need to be changed, and overlapping of successive stages is usually desirable. With children, of course, training cannot force maturation, and at any age it can only assist the patient to learn how to use his own potential. As the therapist gains experience and learns to know the patient, he will be able to adapt the activities to the patient's needs.

Part II. Balance Training Procedures: Successive Stages

HEAD BALANCE

Sagging of neck and trunk on attempted sitting in late infancy and early childhood is more often than not merely one of the signs of the delayed motor development which is characteristic of cerebral palsy. Time alone will often remedy this, but sometimes it is thought worthwhile to attempt to accelerate the process, especially if the child is capable of cooperation. There may be other factors involved besides delayed maturation, and sometimes effective hand use seems delayed by poor head control.

Prone position

In the normal developmental sequence, head balance from the prone position comes first. This may be encouraged by placing the child prone, leaning on his elbows if this is possible. If he cannot lean on his elbows, a pillow may be placed under his chest. Or the adult may hold him prone, with head unsupported, in any way in which the child feels secure: across a lap, under an arm, over a shoulder, or overhead, supported under the abdomen. This will stimulate the head righting reflexes if they are present. Such a child may also be held inverted, by the feet, in an effort to stimulate these reflexes.

Erect position

For *erect head* balance activities, the patient's trunk is supported in the sitting position by brace, chair, wall, manual support or any combination of these. He supports his own head. Some physical therapists favor shaking the head of a young child or infant gently from side to side to stimulate the balance receptors. For the patient who is old enough to be interested, the balancing on the head of a block, a beanbag, or tiny hat in front of a mirror is often advocated. In practice, this sometimes results in such increased tension in neck muscles and distorted posture that it does not contribute to head balance. This method should be used with care.

In some severe cases, a head sling or a cap attached to an upright which is fastened to the chairback, a backbrace, or a floor standard, has been judged helpful. Another aid is a modified Thomas collar, carefully fitted, worn either during all waking hours or for limited periods only. These collars have been made of various materials such as leather and steel, a padded plaster core, and a stiff sponge rubber covered with sheeting. Such slings and collars have obvious inherent disadvantages, especially when lack of head control is the result of athetoid tension, and often no really satisfactory solution is found.

Supine position

Controlled raising of the head from the supine position is developmentally later than are raising from the prone position and control in the erect position. Its attainment is often very much delayed in cerebral palsy, even when erect head balance is fairly adequate. Such a selective delay appears to be the result of weakness of

neck flexors and abdominals rather than of absent righting reflexes per se.

SITTING BALANCE

Sitting balance is usually practiced with the knees flexed because of overactivity of the hamstrings. It may be practiced on a flat surface, on the edge of a table, or on a chair or stool. Ordinarily, in chair or stool sitting, the feet should rest firmly on the floor or a firmly fixed footstool, the seat being low enough to allow the greater part of the weight of the legs to be borne on the soles of the feet rather than on the undersides of the thighs and on the hamstring tendons. It may be an advantage in early stages to have the seat just high enough to give some light support to the undersides of the thighs, although this may not be necessary later. In some cases feet may be strapped to a footstool, skis, or a foot stabilizer.

Certain children, especially those with extensor thrust which is activated by pressure on the soles of the feet, may sit more easily with feet dangling, or with feet supported on toes in plantar flexion. The latter, although not a desirable foot position, might be allowed for short periods of practice sitting at an appropriate stage.

Sandbags are often an important help in stabilizing thighs and/or feet at the beginning of each new phase of sitting, or they may give a feeling of security when placed next to the hips. Even pillows may help when used similarly. In chair, stool, or table edge sitting, knees should, if possible, be separated to widen the base. When long leg braces with pelvic band are worn, often a 90 degree hip lock helps in sitting balance.

Supported sitting

In supported sitting, the patient may at first sit in a semireclining position, in a chair whose seat and backrest slant backward enough to allow him to maintain the desired position. He may be supported at the sides, or be required to control lateral balance himself. As control improves, the chair may gradually be brought nearer to the upright position.

As soon as the patient begins to have the ability to regain the upright position after leaning forward or to the side, he may sit for increasing periods in a so-called "upright" chair. It should be remembered, however, that studies of normal sitting posture show that it is desirable for both seat and backrest to slant backward somewhat. A backward slant of the seat allows gravity to help in keeping the hips back in the chair, and the sitter can really rest against the backrest only if it is slanted. If necessary at first, the trunk and pelvis may be tied back in the chair (for many patients with extensor thrust this will not be a complete solution without a 90 degree hip lock), and chest and shoulders may be secured with a figure eight bandage.

Disturbed balance activities may consist of arm or trunk movements by the patient, or gentle pushing by the therapist.

Unsupported sitting

In unsupported sitting, an anteroposterior C-curve may be permitted in practice in the very beginning, but the aim should be to have the pelvis upright, with a normal sitting angle between it and the thighs. The patient may at first be taught to lean on his hands, placed either on his knees or beside him on the sitting surface. Sandbags or blocks may be placed under his hands. As mentioned above, loosely filled sandbags may be placed across thighs, or around hips, and feet may be fixed with sandbags or straps.

Cross sitting (tailor sitting) is practiced on the floor or the treatment table. A child's chair with legs cut off is sometimes recommended for use, but many question its value. The child may be placed with his back to a wall, or to the therapist. Manual or other support may at first be given to the lower trunk and pelvis. Some young children may be able to sit as a normal infant does, the legs in front, flexed but not crossed.

Often sitting balance is practiced on the *edge of the treatment table*, with the lower legs over the edge. This has certain disadvantages, namely the lack of foot support, the fear-provoking height, and the tendency of the child to grip the table edge with the hamstrings. But the feet may be supported on the knees of the sitting therapist, while manual support is given to the trunk. Or the therapist may control the lower extremities by standing and leaning against the lower legs of the patient, taking care that the table edge is padded. Knees should be slightly separated. The child may straddle a table corner at first. A roll may be put under the knees to throw the weight of the thighs back toward the buttocks.

A *straight chair*, with support for the feet, is usually preferable to the table edge. Progressively less help is given, and eventually if possible *a stool* is substituted for the chair. Chair or stool may be placed on a mat to lessen the fear of falling. Independent sitting balance is

attained when the patient is safe and confident on a stool with no one near.

Disturbed sitting balance exercises should not be forgotten. In addition to those described in Part I, swings, see-saws, rocking horses, tricycles, and bouncing on an adult's knee are all valuable.

QUADRUPED ACTIVITIES

Quadruped activities are part of the progression toward walking in the development of most normal infants. It is difficult to consider the balance components of these exercises separately from their other excellences among which are reciprocation, crossed coordination between upper and lower extremities, weight bearing on the upper extremities, and the use of abdominals to prevent trunk collapse. These exercises are often beneficial even for older ambulatory patients.

Quadruped stance

Usually a patient will be able to maintain the quadruped stance after being placed there before he can attain the position himself. Arms and thighs should be vertical and knees should be slightly separated by sandbags if necessary. Sandbags may be placed across the lower legs. Sometimes, for comfort and stability, support must be placed under the instep, or the feet placed over the edge of a table or mat. If this activity is practiced in braces with hips and knees locked at 90 degrees, it is mandatory for the feet to be over an edge and free, otherwise too much weight is thrown forward onto the hands. Older patients with limitation of plantar flexion may find it necessary to wear shoes to prevent painful pressure on the dorsum of the foot.

Since there are four widely separated points of support, lack of ability to maintain the position is more often due to weakness, contractures, or to abnormal tensions than to lack of balance, per se. An uncontrollable tonic neck reflex will make the quadruped position difficult or impossible.

The physical therapist often starts, with a young child, by putting him on his knees with his chest on the table, his feet over the padded edge. The therapist leans against the feet to stabilize them and gives manual support to the hips, while the child tries to push up with his arms.

A more natural method which can be used with some small children starts with the patient prone. The therapist grasps the pelvis, rolling it to one side, causing the hips and knees to flex if there is not too much tension present. Then the pelvis is rolled up over the flexed knees by the therapist, while the child attempts to support his trunk on his extended upper extremities.

An older, more advanced patient may push up with his arms from the prone position and then, with or without help, flex his knees under him. To create intermediate stages, some support such as a "crawler," a stool, or a blanket roll may be placed under the abdomen.

Disturbed quadruped balance exercises may consist of swaying the body forward and back without moving the hands (an activity which is prominent in the infant just prior to creeping), swaying the hips as far as possible from side to side without collapse, and of course resisting abrupt pushing by the therapist.

Creeping

Creeping on all fours is of course the next stage. Because of abnormal tensions about the hips, and probably also because of neurological interference with reciprocation, "frog-hop" creeping with the lower extremities moved simultaneously is common. This is usually permissible to a certain extent at least, because a small child needs to learn to get about independently on the floor in whatever manner is possible for him in order for him to develop initiative, to learn to manage his body, and to learn more about the world. But when creeping is given as an exercise, moving the extremities in normal crossed coordination is encouraged; i.e., in this order: right hand, left knee, left hand, right knee.

An older, more advanced patient may make a more difficult activity of this by trying for maximum hip and shoulder motion and by lifting hand and knee at each step instead of sliding them.

Various "crawlers," pieces of wheeled equipment designed to hold the patient in the quadruped position by giving support under the abdomen, are sometimes recommended for encouraging creeping activity. Some children enjoy crawlers, since a change of position is provided and they may learn to push themselves about in one way or another. Extensor head balance is stimulated and the use of the upper extremities with elbows semiextended. In the experience of most of the therapists questioned by the writer, crawlers are seldom of great benefit in speeding the attainment of independent creeping. One physical therapist did feel that crawlers were of aid in the teaching of assisted reciprocal creep-

ing movements of the lower extremities, the arms being supported on a shelf in front. When used in this way, the crawler should be placed on a rubber matting or exercise mat so that it will not roll too freely.

Advanced quadruped activity

An advanced quadruped activity difficult enough for many fully ambulatory patients is what may be called the "quadruped opposite arm and leg raise." Starting in the quadruped position, the patient may first attempt to raise from the mat in turn each of the four extremities, balancing on the remaining three. Then, again starting from the quadruped stance, the upper and lower extremities on the opposite sides of the body are raised carefully, trying for maximum extension of the lower and full elevation of the upper, while balance is maintained on the remaining two extremities.

KNEELING ACTIVITIES

Kneeling activities provide practice in upright balance without requiring much knee, ankle, or foot control, and with a comparatively low center of gravity. Thus they are commonly used as part of the training progression toward standing and walking, although they are not outstanding in the normal infant's development. Some patients learn to walk without mastering kneeling and knee-walking. A hip flexion contracture or tight rectus femoris will interfere with kneeling.

Knee stance

In the knee stance, the knees should be slightly separated, if necessary with a sandbag. The lower legs may be stabilized manually or with sandbags. As in the quadruped stance, feet may need to be over the edge of mat or table, and some older patients may need shoes for comfort. The patient may sit on heels, grasp a stable object such as a chair or stall bars, come to knees and then attempt to let go gradually and maintain balance; or he may attempt to raise himself from heel-sitting without support. The latter is usually more difficult. *Disturbed kneeling* activities, which are introduced next, are usually enjoyed by the patient, in the form of ball playing, beanbag, or rhythmic movement to music.

Shifting of the body weight from one knee to the other must often be taught, and is best done with the aid of a mirror. The patient should attempt to keep his shoulders level, and to keep vertical "a row of buttons down the front" (real or imaginary), ruling out lateral flexion of the trunk, bringing in the action of the gluteus medius. Sometimes a patient will not be able to take steps on his knees until he is shown how to shift his weight away from the knee to be moved.

Knee walking

Knee-walking, the next stage, is an awkward form of locomotion, in which it is sometimes difficult to obtain the cooperation of a young child who cannot understand its purpose. Scrambling hastily across the mat on the knees until collapse ensues should be discouraged. Control, with the ability to stop at will, is the aim. Sometimes short canes or crutches are useful.

Balancing on one knee

Balancing on one knee is a difficult activity for very advanced patients.

ERECT ACTIVITIES WITH SUPPORT OTHER THAN CANES OR CRUTCHES

Supportive standing balance

In early supportive standing balance, the use of a *wall* for support is often suggested. It can be used in several different ways, and should be alternated with other forms of supported standing. The use of a wall may be broken down into gradual steps, as follows: back to a corner (feet slightly away from the wall); back to the wall, one side to a corner; back to the wall, no lateral support; facing wall, leaning on both hands; facing wall, leaning on each hand alternately; side towards wall, leaning on one hand.

The *standing table* is in common use for supported standing, but usually for other reasons than to improve standing balance, since the patient has constant waist-high support. Conceivably it may, of course, affect standing balance to some degree.

When hand use is adequate, *parallel bars* may be used for supportive standing, or two pieces of stable furniture. When standing with two-hand support has become possible, each hand in turn should be raised momentarily and replaced, and finally, standing with one-hand support attempted.

Weight shifting from foot to foot (with support from one or both hands) should be practiced laterally with a mirror, as described under

kneeling, and anteroposteriorly with one foot forward of the other.

Disturbed balance exercises may be practiced with one hand support, or two handed activities such as clapping and ball-playing may be practiced by letting go of the bars momentarily.

The value of the *foot stabilizer* in teaching balance is questioned by some, but others, including the writer, feel it has an important place. By stabilizing the foot and ankle (and knee, if necessary), and by providing a wide base, it can often make it possible for the patient to control his body above the stabilizer without hand support, in a way that is difficult or impossible to achieve otherwise. Even crutch walkers need to learn as much balance as possible without hand aid. The use of the stabilizer may be begun in a protected place such as between parallel bars. Later practice can be in an open space. The cuffs are fastened as high as necessary in the beginning, and may be moved down as balance improves. Then one cuff after the other may be unfastened, and sometimes one footstrap.

Often it is better to fasten the anterior calf straps loosely at first, so that the patient may lean forward and take advantage of the anterior length of the base. While this position is not normal, it is in a way merely a gross exaggeration of normal standing posture, with the center of gravity slightly forward of the ankle joint. As balance improves, the calf straps (which should be padded) may be tightened and the patient brought back to a more normal alinement. Care should be taken, however, to keep the center of gravity anterior to the ankle joint. It is not necessary for the posterior calf to rest back against the cuff.

The stabilizer, because of its safety, offers excellent opportunities for disturbed balance exercises, including games with two or more children.

For the small child with long leg braces, similar practice can be made possible simply by stabilizing the braces. One convenient way is for the child to stand between the knees of the sitting therapist, facing away from the therapist, who may place his feet across the child's insteps, and give varying support with his own feet and knees. This method, however, cannot give the training in psychological independence of personal support that the foot stabilizer can.

Supported locomotion

In considering aids to supported locomotion, most therapists consulted felt that long *skis* (3 to 3½ times the length of the shoe) are awkward for the patient and not useful. A few used them for patients with long braces, with crutches, without ski poles. It was generally felt that short skis are often helpful for stability in any kind of early walking, but especially with long braces. Of the physical therapists who had used several types of reciprocal skis (skis designed so that the hand support advances with the contralateral foot), almost none felt that these were beneficial in their therapy programs.

Parallel bars, of course, are important in this program. Ideally, their dimensions should allow the distance between the patient's hands and their height from the floor to be approximately the same as if he were using crutches or canes. Often, however, it is easier for him to start with the bars somewhat higher than this, and have them gradually lowered. In addition to the ordinary method of walking between the bars, while holding with alternate hands in normal crossed coordination with the feet, there are more difficult possibilities such as holding with one hand only, both between and outside of the bars.

Although it is sometimes said that the use of *walkers* teaches incorrect walking postures, most of the physical therapists consulted felt that if the patient must contribute toward keeping his balance while in the walker it often has great value. It is better for the patient to lean on his hands, or even on his elbows on a shelf built for that purpose, than to have axillary support, but even the latter may be justified at times for patients whose lower extremities are better than the upper. A walker may provide many more hours of walking and balance practice than would otherwise be possible, and the psychological and personality building value of independent locomotion can hardly be overemphasized. Undesirable postures can be minimized by supervision, or better still by selection of a walker whose dimensions and mobility are exactly suitable to the patient's needs.

A walker should give the patient enough support for safety, but not more than he needs. It should not be so stable that it allows excessive forward inclination of the body, as a very heavily weighted doll carriage may. The hand support should not be so high that the patient can "hang" on it with his hands, although it may be rather high at first if necessary, and then be lowered. The base of a walker should be as broad as necessary for stability, but the broader the base, the greater the steering difficulty. Any type of walker may be weighted to increase its stability; the lower the weight, the greater its effect.

These are the common types of walkers, in order of increasing difficulty of control: 1) no wheels, e.g., a straight chair with metal glides on its feet, or two sawhorse crutches fastened together with bars across the front and the back; 2) two wheels, plus two feet that glide without wheels; 3) four wheels, none swiveled (this being hard to turn), e.g., a doll carriage (a springy carriage is unsuitable); 4) two wheels swiveled and two fixed; 5) four swiveled wheels.

Another possibility for support consists of furniture and walls. It may be handy for the patient to be able to use these at times. Many learn to do so at home without instruction, as normal infants do, but some need encouragement and teaching.

There is a kind of supported walking in which an adult walks closely in back of a child, fully supporting him, shifting his weight from side to side, propelling him forward, and, in some cases, even kicking his feet forward for each step. In its simplest terms, all independent ambulation, even the drag-to crutch gait, consists of two components—balance in the upright position, plus self-propulsion forward. Thus it is questionable whether the child who merely makes nonpropulsive stepping motions with his feet while being fully supported is progressing toward walking. There may be occasions when this method is proper, in order to move a patient from one place to another, or when it is one of the few activities possible for a severely disabled patient, but it should not be considered a training procedure for walking unless some elements of balance and propulsion are present. It is of course even undesirable for the crutch or cane candidate to learn to expect support from the rear, as he will with this method.

CRUTCH AND CANE ACTIVITIES

Because of poor balance, a cerebral palsied patient will usually need a wider base and hence longer crutches or canes than are recommended for other disabilities. Patients often prefer canes to be high, allowing more elbow flexion than that considered optimum for many other conditions. Often a heavy cane with a large grip is preferred. Tips should in general be large and soft.

The types of crutches and canes in approximate order of increasing difficulty are these: sawhorse crutches and crab crutches (these are cane height, with broad bases), axillary crutches, Canadian or short crutches of various types, tripod canes, two standard canes, one cane. Any of these may be weighted and the weights gradually reduced for athetoid patients who cannot keep the crutches on the floor, or for those with a tendency to fall backward.

Standing with crutches or canes

Standing with crutches or canes may begin with the patient's feet in a stabilizer, or between parallel bars, or with the patient's back to a wall but not touching it, or with a harness, or with any combination of these. As balance improves, protection is gradually removed.

Disturbed balance activities may consist of standard *crutch balance exercises.* These may also be done with canes, sometimes even by a crutch walker. The following are typical: moving one or both crutches from side to side; moving crutches forward, away from feet and return; balance on one crutch; leaning forward between crutches which have been removed from the axillae and are held as canes; standing on one foot, with two crutches or with one (on the opposite side from the foot). Others may be improvised.

Walking with crutches or canes

Walking with crutches or canes may be begun when standing with them is fairly secure. Manual support may be necessary at first, but often it seems better to use a simple harness or belt with the free ends held by the physical therapist. Actual support may be given at first; later the supporting straps may be held slack, so that there is no support but the patient feels secure and a fall may be broken. A light hold on the shirt, belt, or pelvic band of a lightweight patient sometimes serves the same purpose. Some physical therapists find useful a harness attached by a long strap to an overhead track along which the strap moves with the patient.

When the patient feels fairly safe within the treatment situation, and can maneuver sideways and backwards as well as walk forward, he should if possible be taken farther afield, in corridors or on sidewalks with people passing, or in elevators, or in whatever varied situations are available.

Advanced crutch-walking activities may be introduced in an attempt to produce a balance reserve. The patient may walk in a foot placement ladder. This requires the lifting of the foot at every step. Many patients drag their feet merely because this requires less balance than to lift them. Obstacle courses may be used with objects over which the patient is to step, or serpentine walking; i.e., weaving in and out of a number of objects set on the floor in a straight

line. Walking on a soft mat or mattress, on sand or gravel or rough ground or an uneven sidewalk, or walking a chalk line may all be valuable on occasion. Sometimes the patient may attempt walking with less support than he really needs for independence, even when this type of support is not expected to become practical. For instance, a crutch walker may attempt walking with canes or with no support. It is best to explain to patient or parent that this is simply an exercise to improve balance.

ERECT ACTIVITIES WITHOUT SUPPORT

Free standing

Free standing may sometimes be practiced along with crutch and cane activities. If hand use is poor, manual support by the physical therapist may be necessary at first to steady the patient for beginning independent free standing; but if upper extremity use is adequate, it is probably better to begin with the patient between parallel bars or other stable objects, leaning on the flat of his hands. A small child may lean his hands on the therapist's knees, or on the therapist's hands held palm upwards and flat. First the patient should learn to stand with the support of one hand, then the fingertips only. Finally he should slowly lift the hands only slightly from the supports and balance himself. Patients of all ages tend to fling their arms into the air and then attempt to regain balance. Of course this controlled method is difficult to teach some young children, and compromises must serve.

The following method is often recommended for beginning standing balance, but it actually constitutes a disturbed balance exercise, and thus is more difficult for most than starting between the parallel bars: the patient leans back on a wall, heels slightly away from the wall. He then attempts to bring his trunk away from the wall and maintain balance. Success may be easier if one foot is slightly more forward than the other.

Weight shifting and disturbed balance activities should follow, as described under supported standing.

Advanced standing activities will suggest themselves. In narrow base standing, the feet are first brought together so that the inner borders touch. When balance has been achieved in this position, one foot is gradually moved forward, and eventually one is placed directly in front of the other—or one heel may be placed on the other toe.

Standing on one foot can be tried between the parallel bars. Usually it is best for the patient to support himself with one hand, raise the foot on the same side, and gradually let go with the hand while maintaining balance on the opposite foot. Often it is necessary to teach the patient that he must shift his body weight directly over the supporting foot before he lets go.

Occasionally, patients with fairly good standing balance will have difficulty in standing with one foot on the floor and the other placed on a step or low stool. This may be practiced facing both toward and away from the step, and its achievement should add to security on stairs. So simple an activity as standing on a small stable stool may be difficult for some patients because of fear (just as standing on the very top of a step-ladder is for some of the rest of us) and it is worthwhile to try to overcome such fears.

Independent walking without support

In working toward independent walking without support, the harness or belt mentioned under crutch-walking is again recommended (and crutches, or canes, or a walker, if necessary). If manual support must be given, however, usually it is better not to hold the patient's hands, but to support the trunk or pelvis lightly, so that the patient can use his upper extremities for balance. But if the adult is to give support to the patient's hand, one should try to have the patient grip the adult's wrist or hand rather than vice versa, so that the patient must exercise most of the control himself.

Advanced activities for free walking include all of those mentioned under crutch-walking. Some, like the foot placement ladder, may be practiced between parallel bars at first. Stopping quickly and turning on command need to be practiced by many.

Many "*activities of daily living*" as taught in the physical therapy department are in themselves excellent balance training. Descending stairs without rails and getting up from the floor are often the most difficult. Simple games and athletic skills are also valuable.

CLOSING COMMENT

This is not an orderly system of exercises through which it is expected that the patient will progress to inevitable independence. It is a presentation of existing methods of balance training for cerebral palsy, and their rationale, organized for reference in the working situation where balance problems must be dealt with.

Training may in one case make only the difference between secure and insecure sitting; in another, between safety and danger in going up and down curbs. Other patients may make considerable improvement over a period of time. If these are growing children, it is sometimes difficult to tell how much of the progress was due to training and how much to maturation. But the physical therapist who wishes to do justice to his cerebral palsied patient must have as many balance technics as possible at his disposal.

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The Organization and Development of a Physical Medicine and Rehabilitation Service Within the Framework of a Welfare Agency

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Baylor University College of Medicine, Department of Physical Medicine and Rehabilitation, since April, 1954, has operated and maintained a small rehabilitation unit for the indigent and aging indigent, with particular emphasis on the clients of the Houston-Harris County Board of Public Welfare, Houston, Texas.

In April, 1945, the Houston-Harris County Board of Public Welfare opened a convalescent home in the Old Jefferson Davis Hospital building, the former city-county hospital. Forty-five beds were provided on the fourth floor. Medical care was obtained at Jefferson Davis Hospital the present city-county hospital which is the teaching facility for Baylor University Medical School.

In the fall of 1952, and again in the fall of 1953, unsuccessful attempts were made to establish a Physical Medicine and Rehabilitation Service in the Old Jefferson Davis Hospital. This unit was to serve the patients living in the convalescent home. Money for equipment and operation, including salaries, was furnished by two interested families in the community. Definitive care in physical medicine was offered. These efforts failed due to lack of a firm policy of admissions and discharge in the convalescent home. Turn-over of patients was too slow to make it economically feasible to continue a restorative program.

With the institution of the Department of Physical Medicine and Rehabilitation at Baylor University College of Medicine in January, 1954, it was requested that the unit at Old Jefferson

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Davis Hospital be re-activated. In late March of that year, the facility was re-opened. No real change had been made in policies governing admissions and discharges of patients in the convalescent home.

When the unit re-opened, the staff consisted of one physical therapist, one nonprofessional, untrained aide, and the physiatrist, who was available for consultation one-half day each week. Part-time janitorial service, electricity, water, and heat were supplied by the Board of Public Welfare.

Physical space for operation was one room, 20 feet by 42 feet, located on the second floor of the Old Jefferson Davis Hospital building. This was accessible from the fourth floor by self-service elevator, and by elevator or steep, unrailed stairs from the outside. In order to reach the department, it was necessary to pass through a clinic operated by another agency.

Originally, the treatment program was designed primarily for the patients living in the convalescent home. The long range plan was for expansion which would allow extension of service to other clients of the Board of Public Welfare.

Most of the patients initially referred had received treatment in physical medicine and rehabilitation previously. Aims of treatment had not been clearly understood by the nursing staff and the patients. As a consequence, gains made through treatment had been lost. Many of these people had become inactive and some had again become virtual bed patients.

In the early phases, it had been necessary to take all patients referred. Of the 37 patients living in the convalescent home, 8 were selected by the physiatrist as candidates for physical medicine. These represented the usual disabilities of arthritis, cerebral vascular accident, fractures, central nervous system diseases, and spinal cord lesions. The treatment load increased to 14 by the end of the first month of operation and continued to increase gradually. With one exception, the patients were 50 years of age or older. Within six months, the patients first referred from the convalescent home had achieved maximum benefits.

The program consisted of treatment in the department and on the ward with the usual modalities of physical therapy. Diversional activities were encouraged outside of the treatment program and for a time were carried on in the rehabilitation unit and on the ward on an individual basis. These activities were under the supervision of the physical therapist and on the prescription of the physiatrist. As more patients began to participate in this program, it became too time consuming for the physical therapist. Efforts were made to continue with the use of volunteers and later with a part-time crafts instructor. Neither of these attempts proved satisfactory and the program was discontinued as a supervised project.

The nursing staff of the convalescent home, the social case worker, and her supervisor seemed unable to accept or acknowledge the purposes of a treatment program in physical medicine; therefore, no efforts were made to release patients from the convalescent home or to plan for their discharge after maximum benefits had been reached. There were few new admissions to the convalescent home, and as a result, to the Physical Medicine Service.

To prevent the collapse of this carefully nurtured program, a shift in the emphasis of treatment load became imperative. Repeated efforts were made by the physical medicine staff to acquaint the Director of the Board of Public Welfare with the services available to outpatients. In October, 1954, the physiatrist was invited to speak to the entire social case work staff of the Welfare Department about the role of physical medicine in the rehabilitation of the physically disabled. The social case workers had not been aware of the value of early rehabilitative care or of how the Physical Medicine Service could benefit the disabled client being carried on relief status.

Although there was evident interest in the work being done in the rehabilitation unit, actual participation by the social case workers did not take place at this time. There had, as yet, been no opportunity to demonstrate the worth of early care or to show how this could save valuable time for the client and shorten the period of welfare assistance.

Soon after inauguration of this unit, the physical medicine staff recognized the potentiality for its growth and service to the community. To increase the usefulness of the unit, an occupational therapist was added to the staff in December, 1954.

In March, 1955, the Executive Director of the Board of Public Welfare, in an earnest desire to offer the best kind of service to his clients, united with the physical medicine staff to plan the first inclusive meeting of supervisory personnel from his department, the convalescent home, and from the physical medicine department. The chief supervisor of social case workers, superin-

tendent of nurses of the convalescent home, the social case worker of the convalescent home, Executive Director of the Board of Public Welfare, the physiatrist, occupational therapist, and physical therapist were present. At this meeting, attempts were made to explain the position of each group as it related to the patient. The Director of the Board of Public Welfare was asked to clarify the purpose of the convalescent home.

Objectives of the physical medicine and rehabilitation treatment program were defined as:

1. To assist the patient to achieve some measure of self-discipline,
2. To help the patient to understand his disability,
3. To attempt to reestablish work habits,
4. To increase work tolerance and endurance,
5. To help the patient to develop as much physical independence as possible.

Underlying these objectives was the basic philosophy that preservation of human dignity was equally as important as restoration of physical function.

The physiatrist asked if beds could be reserved in the convalescent home for patients who needed intensive care in physical medicine. A specific number of beds could not be allocated to this purpose, but assurance was given that any time a bed was needed, it would be provided if the applicant met the Board of Public Welfare eligibility requirements.

A procedure for referral and acceptance of outpatients was outlined. Only patients referred from Jefferson Davis Hospital would be considered for outpatient treatment, since necessary medical work-ups, X rays, and laboratory tests could be more readily obtained for the indigent patient through the city-county hospital. The physiatrist also requested that all outpatients have a tuberculosis and venereal disease clearance before admission to the Physical Medicine Service.

The Director of the Board of Public Welfare explained the difficulties involved in discharging patients from the convalescent home. Many of these patients had no families or homes to which to return. Nursing homes were woefully overcrowded. Age, disability, and past work records placed many in the so-called "unemployable" category. The use of foster homes was suggested as a possible solution for those who required custodial or domiciliary care. This was accepted as a valuable suggestion that merited investigation. The low budget allowed for this kind of placement, however, does not permit a wide selection, and desirable and suitable homes for this purpose are difficult to locate.

Out of this joint conference came the realization of the many problems confronting each service. Until this meeting, neither group had fully appreciated the concept of the individual operation of two related, yet independent agencies. At this time, it was decided that bimonthly meetings of this same staff should be held in order to establish joint policies and procedures. It was also requested that these meetings should include discussion of patients who were already receiving treatment in the rehabilitation unit. Another request was that the social case worker whose client was being reviewed be present to give the social summary and to participate in the discussion and plans for the patient's treatment program and eventual termination.

The chief case supervisor was asked to survey the case load of the Board of Public Welfare to determine how many clients were receiving aid because of physical disability. A short case history was prepared on each of these and this summary was submitted to the physiatrist. From this group, he chose a number who should be sent to Jefferson Davis Hospital for evaluation and possible referral to the physical medicine department.

By this procedure, several patients were referred and accepted for treatment; 4 were lower extremity amputees, who had been provided with prostheses by the State Office of Vocational Rehabilitation. Very little, if any, preparation had been given before the prosthesis was received, and no training in the use of the limb had been provided. Tangible results of concentrated treatment on a few selected patients impressed the social case workers with its value and inquiries came about the possibilities of treatment for other clients. In the course of the following 9 months, 20 outpatients were added to the treatment load. Of this number, 2 were brought into the convalescent home to receive intensive care in the rehabilitation unit.

The increasing outpatient load immediately brought certain difficulties. Finally, a form requesting necessary basic information was drafted for use of the social case worker. This form was sent along with the client when he reported to the hospital for an appointment. The examining physician could quickly supply the requested information and add any pertinent remarks or information, if his evaluation indicated referral to the Physical Medicine Service. This form was returned to the social case worker by mail and then delivered to the rehabilitation

unit. An appointment was made for the patient to be seen by the physiatrist. The social case worker made the necessary transportation arrangements and informed the client of his appointment date and time. If possible, the worker came with the client for this first examination. A summary of the patient's hospital chart was prepared by the physical medicine staff before the patient reported for the initial examination.

An outstanding problem was transportation. First of all, the location of the rehabilitation unit was in an isolated section of the city where bus transportation was not within walking distance for the handicapped. The cost of cab fare was prohibitive. Red Cross motor service could provide a limited amount of transportation, but could not meet the needs because of lack of volunteer services. In time this need was made known to Volunteer Community Services, a United Fund Agency, by the Director of the Board of Public Welfare. An effort was made to establish a transportation corps to serve the rehabilitation unit. While this started off well, the corps dwindled to one faithful driver who donated one day a week. A philanthropic group, which became aware of the pressing need, made a regular monthly donation to a transportation fund.

Other difficulties encountered were indifference, in some cases, or refusal of the patient to accept what the long range treatment program meant for him. A long-term disability and a lengthy period of dependence on others to meet his basic needs had destroyed motivation for independence. In some instances, because of heavy case loads, social workers were unable to follow up with frequent home visits.

A valuable standardized form resulted from the need of the physical medicine staff to have immediate basic social information about the referred client. This was to help in planning a suitable program in the unit and for home care. Information was requested about the patient's former employment, his reaction to the suggestion that he be evaluated for possible referral to Physical Medicine Service, and the physical conditions of his home. The latter influenced the type of home program the patient could reasonably be expected to follow. If the client was admitted for treatment, a thorough social service summary was prepared and presented at combined staff conference when the patient was reviewed.

In addition to the problems encountered in treating outpatients, there were many involved in the care of inpatients. When a patient reached maximum benefits in the rehabilitation unit, he could not be quickly dismissed from the convalescent home. Several of these patients were maintained on a treatment program many months past the ideal termination point. The objection to this was that time, space, and staff were not available for a maintenance program. On the few occasions when the patient was discharged and remained in the Convalescent Home, there was a rapid regression to pretreatment level or below.

The difficulties with the convalescent home patients resulted primarily from lack of staff understanding and absence of adequate medical direction. The convalescent home staff consisted of one registered nurse, seven practical nurses, three female aides, and one male porter. Suggestions for self-care ward activities were frequently disregarded as a matter of expediency. The Home was usually filled to capacity. Preparing a patient to meet a physical medicine schedule was an added burden when the staff was unable to see how this would alleviate their load. As patients improved and assumed some of their own care, this attitude began to change, but the change was slow in coming.

Carry-over from the treatment program was further hampered by the physical facilities of the convalescent home. Bathrooms were inaccessible to the patient by wheel chair because of narrow doors, poorly arranged interiors, or a step up or down. Crowded conditions did not leave space for a communal dining room or indoor area for socialization and recreation. A partly sheltered porch garden, which was reached by ascent of a long ramp, and the hallway were the available recreational areas.

In spite of these adverse conditions, from March, 1955 to November, 1955, 4 patients were admitted to the Home from Jefferson Davis Hospital for the express purpose of receiving intensive rehabilitative care. Ten other patients admitted received care when it was indicated. Discharge from the convalescent home continued to be the insurmountable obstacle.

A dramatic change in attitudes and concepts of treatment occurred in December, 1955, with the addition of a new superintendent of nurses. In September, 1955, a trained male social case worker had been transferred to the Home on a part-time assignment. These changes in personnel increased understanding of common problems and made it possible to have a more stable and reciprocal relationship between the convalescent home staff and physical medicine staff.

The common concern of those engaged in the

CHART I

DISTRIBUTION OF PATIENTS BY AGE GROUPS
(April, 1954—November, 1956)

20–29	30–39	40–49	50–59	60–69	
7	10	24	44	20	
			Total		105

treatment of patients, and their awareness for the need of staff medical service, resulted in an agreement between the Board of Directors of the City-County Welfare Department and Baylor Medical School administration to provide such service. A physician joined the staff of the convalescent home in June, 1956, on a part-time basis.

From the beginning it was realized that a staff physician in the convalescent home would be the integral part of the machinery of successful operation. The fortunate choice of a physician who is vitally interested in the total rehabilitation process has added immeasurably to the strength of the whole program.

The purpose of the convalescent home was analyzed and restated. Criteria for admission were established and an admission board appointed. To be eligible for admission, applicants must meet these requirements. Discharge policies have been reorganized and executed. Patients eligible for pensions—those who are blind, who receive old age assistance, or are totally disabled, must be placed in another facility as they are no longer eligible for welfare assistance.

This new interpretation of the purpose of the convalescent home has brought about a change in its name. It is now called the Convalescent Ward and thought of as an extension of service of Jefferson Davis Hospital, even though there is no administrative connection.

Before admission to the Convalescent Ward, a patient is evaluated for referral to the physical medicine department. This makes institution of early treatment possible and results have been far superior. All patients in the Convalescent Ward have had a medical workup since June, 1956. Reports are available in the Ward office.

In October, 1956, the social case worker was assigned full time to the Convalescent Ward. Social histories have been completed on all patients and are also available to the staff. The social worker now has time to prepare the patient to accept discharge from the physical medicine department and subsequently from the Convalescent Ward.

Each week the entire patient load of the Convalescent Ward is reviewed briefly by the physical medicine staff and the professional staff of the Convalescent Ward. Progress reports are given on patients receiving treatment in the rehabilitation unit. Regular staff ward rounds are made weekly. Any staff member may request review of a patient by the bimonthly combined staff conference.

Combined staff conferences are well organized and the feeling of unity of purpose is apparent. All social case workers have been included in these conferences and have slowly grown to accept physical medicine as one of the sources of assistance for clients.

When a patient is admitted to the physical medicine and rehabilitation department, a combined staff conference is held immediately to discuss:

1. Medical history;
2. Present physical, social, and emotional condition;
3. Goals of treatment;
4. Possible disposition or termination of the treatment period; and
5. The patient's expressed goals for himself.

From this initial conference, the staff is able to formulate a common attitude and approach to the patient so he is not receiving conflicting statements from various staff members.

Volunteer Community Services has continued its interest in the transportation problem. Several new volunteers have accepted responsibilities in the corps and while this problem has not been resolved, it is far less acute.

After 30 months of operation, this facility remains in the same confined area; however, space for physical expansion was made available in February, 1955. Detailed plans for expansion were drawn up by the physical medicine and rehabilitation staff. The plans included office area for physicians and staff, social case worker, vocational counselor; dressing, waiting, and examining rooms; enlarged treatment areas for physical therapy and occupational therapy; shop for vocational training, testing work tolerance and endurance; and a large recreation area. Larger quarters will necessitate an increase in personnel, not yet provided for in any budget.

It is the opinion of those most directly responsible for the development and growth of this unit that its greatest contribution has been in educating a certain segment of the community. It has been possible to achieve a better understanding of intradepartmental functions, of the in-

CHART II

DISPOSITION OF PATIENTS TREATED IN REHABILITATION UNIT

Between April, 1954, and November, 1956

Disposition	Number
To employment	20
Maximum benefit. Discharge to home*	15
Discharge to home care*	14
Maximum benefit. Discharge to Convalescent Ward *	10
Failed to report (Transportation, lack of interest, etc.)	9
Discharged to home *	5
Transferred to other facility *	5
Discharged from Convalescent Ward * (Pension, failed to return, needed bed space, disciplinary measure)	5
Discontinued treatment. Illness*	3
Maximum benefit. To Vocational Training *	2
Deceased	2
Total	90
On Treatment Program	15
Total	105

* Being Maintained by Board of Public Welfare.

digent and aging patient and his needs, and the problems confronting each department in its relationship with the patient.

While it has not been possible to succeed with each person referred to the Physical Medicine Service, the results have been encouraging. (See chart 2.) Cost of treatment has been kept to a minimum.

The treatment program has been geared to acquiring functions as rapidly as possible. One advantage of having the physical therapy and occupational therapy sections in such close proximity has been that the patient's progress could be constantly evaluated and guided by both therapists.

SUMMARY

The Physical Medicine and Rehabilitation Department of Baylor University College of Medicine has operated a small rehabilitation unit as a pilot project in total rehabilitation of the disabled indigent and aging indigent who are clients of the Board of Public Welfare of Harris County. While all facilities for total rehabilitation have not been housed under one roof, all necessary services have been available. Some more readily than others.

Multiple problems have been encountered and some remain. In the Department of Welfare these center around lack of trained social case workers, lack of knowledge about medical problems and disabilities on part of the workers, lack of funds to assist with a program of expansion, and heavy case loads which prevent adequate home follow-up by social case workers.

In the Convalescent Ward there are problems of untrained personnel without proper understanding of rehabilitation aims, unsuitable living quarters, inadequate staff to care for patients and also supervise activities of daily living, and slow discharge of patients who have reached maximum benefit.

In general the program is hampered because of limited funds for necessary equipment, such as braces, wheel chairs, splints, bed boards, foot boards, over-bed bars; cramped treatment area with no space for private examination or quiet treatment, office space, waiting room, or dressing rooms for patients or staff; lack of transportation for patients.

This has been a rewarding and worthwhile project which can serve as an example to other communities, regardless of size. Resources in this community have been utilized to provide a select group of disabled persons with an opportunity to lead productive lives. Assistance has come from the following sources:

1. Private
   a) Baylor University College of Medicine.
   b) Thrift Shop.
   c) Citizen groups.
   d) Goodwill Industries.
2. State
   a) Office of Vocational Rehabilitation.
   b) State Crippled Children.
3. Community Aid—Red Feather Agency
   a) Jewish Guidance Service.
   b) Community Volunteer Services (Community Council).
   c) American Red Cross.
   d) Speech and Hearing Center.
   e) Visiting Nurses Association.
4. Social Agencies
   a) Board of Public Welfare.
   b) Catholic Charities.

A rehabilitation center to serve the nonpaying and part-paying patients of Harris County should be the natural outgrowth of this established nucleus.

The Volunteer Helps Solve Group Mat Class Problems

Ethel D. Field

Improvement in the technics of handling children assigned to the mat exercise groups at the California Rehabilitation Center in Santa Monica has been accomplished through interest and analysis of the problem. The purpose of this article is to present an existing problem, a suggested answer, the role of the volunteer, and to describe in detail one solution—a Children's Musical Mat Class.

The problem. The need for better management and control of preschool age children in mat activities was recognized by physical therapists, adult patients, and administrators long before the problem became acute.

Children in adult classes were disoriented and lost; they would cry and disturb others; they needed simplified exercises; they needed more individual help to learn and execute the exercises; they needed to be in a room with a minimum of distraction.

Children on hospital wards need play time, social outlets, and the opportunity to learn to get along with others in a congenial atmosphere.

Suggested solution to the problem. Children under five years should be segregated from adults. The children should be well oriented to the class in order to reduce emotional trauma. The exercises can be successfully worked out on the basis of the things children like to do. Exercises are more meaningful when given colorful names. The children are not told that they are exercising; they are just "playing games." Therefore, they may play "Rocking Horse," "Windmill," "Building a Bridge," all effective exercises. A private room is assigned to the children which excludes major distractions and is used only for this purpose.

More individual help for each child is possible under this system because of the increased interest on the part of the children and the more homogeneous group represented. This is not possible in a mixed age group.

Staff Physical Therapist, California Rehabilitation Center, Santa Monica.

Objectives. The objectives behind "Junior Mats" (as the program has been popularly called) aim at much more than a good physical environment. Equally sought are social and psychological attitudes conducive to cooperative group efforts built around a playtime mood.

Role of the volunteer. The staff physicians presented the story of Junior Mats to the community and gained the interest and cooperation of a group of club women in Santa Monica. These women visited the Center, saw what was being done and what was needed; and organized themselves into the Children's Recreation Service. They have donated both personal service and equipment to the class.

Music is a natural complement of exercise. The volunteers provided a record player and records for use in the Center. These items helped to improve morale and put new interest into the exercises. Now the children go through the games to the tunes of their favorite nursery rhymes.

The volunteers rotated as class aides. The children were delighted. A volunteer could give individual attention and consolation to the new child; she could help the more severely disabled to perform the total exercise; she added warmth and enthusiasm to the class. Since the children saw each volunteer only once a month, the boredom of the daily routine was lessened. In turn, the volunteer would be delighted over the improvement of an old patient and surprised by the appearance of a new face.

Little things can make a big difference. A change in the name of the class was made from "Baby Mats" to "Junior Mats" when it was learned that a 3-year-old no longer considers himself a baby.

Orientation of the volunteer. So that the volunteer may better understand her duties, it is felt that orientation should begin by seeing the hospital as a whole. This is handled by the Social Service worker. A luncheon may be arranged to welcome the new members at which time a

Figure 1. Building a Bridge—child in front "playing teacher." Shows volunteer *helping* child perform exercises.

tour of the hospital and introduction to key personnel is very helpful and makes the volunteer aware of the total program given to the patient.

Each new volunteer is sponsored by an experienced member who brings her to the mat class to observe the activities. At this visit the physical therapist takes 10 minutes or so to demonstrate points in the orientation instruction sheet.

Orientation instruction sheet. The new member is given a mimeographed Orientation Instruction Sheet.

Children's Musical Mat Class
Orientation of New Members of the Children's Recreation Service

WHO ATTENDS THE CLASS?

1. Preschool age children. A large percentage with polio conditions.
2. Degree of involvement varies, but the child is sent to mats as soon as pain and spasms are relieved enough for the patient to sit up. The patient, however, may still require special handling, i.e.:

   Care should be taken not to force the head forward.

   The legs and arms are handled by the joints. No pressure on muscles.

   Children may or may not be permitted to stand or walk and the volunteer should know which ones may not do these things.

   Pain may be caused by forcing the straight leg into the air.

   When lifting the patient care should be taken to support the head, as most polio children have weak neck flexors.

PURPOSE OF CLASS

1. General strengthening of all muscles.
2. Stretching various muscle groups.
3. Psychosocial activity, especially for ward children who are confined to bed.

WHERE AND WHEN DO THEY ATTEND?

The Junior mat room is located on floor 3½, and may be reached by the large elevator or the stairs.

Ward children attend class daily while outpatients may come in daily or only two or three times a week. The class meets at 10:00 A.M., Monday through Friday.

WHAT DOES THE VOLUNTEER DO?

1. Helps encourage activity by doing the exercises with the children (optional).
2. Assists the more involved child through the part of the exercise that is difficult for him, or he cannot do unassisted. (Therapist will usually tell the volunteer which exercise requires special assistance, and with which patient.)
3. Takes charge of the class when the therapist must leave for a moment.
4. *Brings in fresh ideas and suggestions* as to motivation, activity and even decorations for special occasions.
5. Calls attention of physical therapist if she feels that she can not handle a child or if a child needs special discipline.
6. Assists in maintaining a *positive approach to motivation* and helps in keeping the child active by *rewards rather than threats.* (Ideas for rewards are needed.)

Figure 2. Children ready to describe a circle for shoulder exercise. Shows volunteer *doing exercise* with children.

7. In maintaining discipline:
   Slaps and spanks are never used, for obvious reasons.
   Taking the child outside the room for a little talk seems to be effective. For reasons of uniformity, this should be done by the physical therapist.

WHAT DOES THE VOLUNTEER WEAR?

Most appropriate attire is slacks or a full skirt so that she can easily do all of the exercises with the children. It is desirable, but not essential, to wear soft soled shoes, used only on the mats, for sanitary reasons.

Scheduling the volunteer. An organized volunteer group takes charge of scheduling with the mat activities chairman arranging the schedule a month or two ahead. If unable to keep her appointment, the volunteer can find a substitute; if she fails to appear or send a substitute she may be penalized by a fine.* Funds collected in this way are added to regular club dues and are used to purchase such items as the record player, new records, and transportation carts for use in taking several children about the hospital for various treatments.

The volunteer becomes oriented to her new duties quickly. After only one or two visits she feels at home and is able to "carry on," even during the temporary absence of the physical therapist. Although the volunteer is not expected to manage the class, she can operate the record player and maintain discipline. The exercises should be clearly described and copies should be in the hands of both the physical therapist and the volunteer.

Conditions treated. Approximately 90 per cent of the children in Junior Mats are postpolio patients. Occasionally there is one case of arthrogryposis multiplex congenita or a case of osteochondrosis.

Specific procedures. Number participating in the program varies from 3 to 14 daily. Policies include the following: Mothers and other nonparticipants leave as class begins. Distracting items such as toys, gum, food or pocket coins, are excluded. Talking is discouraged but not prohibited.

Discipline is rarely necessary, but when obviously needed, a child may be put in a baby crib until he realizes he is a "Junior" and should act like one; or a child may be taken outside for a serious talk which has a beneficial effect on both the child and the group as the others are not sure what happened outside and are not anxious to find out!

The last day a child attends class ("Graduation Day") is a gala occasion. He is permitted to be "teacher," an honor greatly coveted, and the physical therapist takes her place on the mats as a pupil. The child's commands are often given with great self-assurance and aplomb, and response is complete and vigorous. The children love to lead and be led by their own kind. Occasionally this idea may be used at other times when the situation seems to call for it. It is useful in dealing with a variety of problems.

* Fines are imposed and collected by the Women's Recreation Service. The hospital is no involved.

Routine. The music starts; the children take their assigned places on the mats, so spaced that each can romp and roll freely without interfering with his neighbor. Those either too friendly or antagonistic are kept apart. Two 12-inch records furnish music for the whole 45-minute period and specific exercises are learned to be used with specific tunes, as outlined in the chart.

Side I of Pops for Tots Record.

Tune	*Exercise Name*	*Position*	*Description*
"Hi Ho"	Sit-walk	Long sit	A. Kick straight legs alternately (lift from mat) reciprocal. B. Legs rest, arms abducted 90°, swing hands in circle. C. Keep arms swinging and kick legs as in A.
"Somewhere Over a Rainbow"	Reaching	Sit, legs apart	A. Reach both hands to toes of one foot, then the other, for abdominal exercise and stretch. B. Flex trunk, touching head to one knee, then the other. Hands may be clasped behind head for better result.
"Sam the Whistling Man"	A. Bicycle B. Scissors	Supine Side-lying	A. Reciprocal kicking with legs flexed, then straight. B. Abduct hip of upper leg with knees straight, do right, then left leg. Change sides.
"Mama Waltz"	A. Wigwag	Supine	A. Grasp flexed hips and knees holding together, swing from side to side.
	B. Airplane	Prone	B. Clasp arms behind back, rock from side to side on tummies.
	C. Rocking chair	Supine	C. Extend neck, trunk and legs, grasp ankles with hands and rock end to end.
"Bible Tells Me So"	Clap	Sit	Hike hip and bring leg forward reciprocally, walking while sitting; clap hands to rhythm of walk and music.
"Story Time"	Rest	Prone, eyes closed	Children listen to Snow White story while resting
"Little Brown Jug"	Chopping	Sit	Clasp hands, elbows straight, hold arms over head and give vigorous chopping motion, hitting mat on opposite side from starting position. Go to right, then to left. (Diagonal trunk flexion)

Lawrence Welk's 1956 Christmas Record is used for the second group of exercises.

Tune	*Exercise Name*	*Position*	*Description*
"Let It Snow"	Windmill	Long sit	Turn body in circle, taking "steps" by abduction and adduction of straight legs.
"Mistletoe"	A. Seats up	Long sit	A. Reverse pushup by shoulder depression and hip extension, pushing seats off the mat. Command, "Up, down, up, down."
	B. Bridges up	Prone	B. Push whole body off mat into bridge-like arch. Command, "Bridges up, bridges down."
"White Christmas"	Rocking horse	Supine	Flex neck, trunk, hips and knees, grasp and lock fingers under knees. Rock end to end in rocking horse manner.
"Christmas Island"	A. Hips, toes	Sit	A. Sitting with straight legs together, touch "Hands on hips, hands on toes."
	B. Kiss knees	Sit	B. Flex neck and back attempting to kiss knees.
"Tiny Toy"	Rock-a-bye	Sit	A. Lateral trunk flexion, leaning as far as possible to one side, then the other. B. Add hip motion by touching left toe to right of right toe and reverse.
"Santa Comes to Town"	Crawling		Children allowed freedom to crawl, hop, roll, and race, but do not leave mats or stand or walk. Hop "like bunnies," crawl on tummies "like snakes," or pretend to be animals of their own suggestion. Individuality encouraged but boisterousness and belligerence discouraged.

Finally comes the heartwarming day when the mother of a graduate drops in for a visit. Usually they tell the same story. "Junior" has taught the whole family his mat games and nightly everybody is down on the floor doing the "Wig Wag," "Rocking Horse," "Clap and Scoot," and the whole routine.

Children not only love Junior Mats; they perpetuate it.

Thus, through thoughtfulness and teamwork the fight against monotony is won, a sound psychological atmosphere has been created, and a good physical environment assured.

Johnnie, age 3½, has a better chance for normalcy because of the teamwork of many and the concrete help of the volunteer.

Photographs used to illustrate this paper are the work of Gus Valdemar, Physical Therapist, at California Rehabilitation Center, Santa Monica.

Case Report

Modification of Hemiplegic Gait

Elizabeth J. Davies, Major, AMSC

This case report is presented to show the effect of some neurophysiological technics used with one hemiplegic patient in an attempt to reeducate his gait.

The patient under consideration was a 19 year old army specialist. In August 1955, while on duty in Korea, he was admitted to an evacuation hospital with chills, fever of 106°, nausea, backpain and headache, with a subsequent diagnosis of hemorrhagic fever. The illness was severe during the last of August, but by early September the petechiae were fading, and other sequelae of the disease were resolving themselves. On September 2, while straining at stool, he suffered a CVA resulting in a left hemiplegia. He improved sufficiently to be transferred to Letterman Army Hospital where he arrived Oct. 7, 1955.

Upon admittance he was examined by the neurological and cardiology staff who felt that a diffuse hemorrhage or thrombosis had occurred in the vicinity of the right middle cerebral artery. He demonstrated a left spastic hemiparesis, with diminished sensation over the left half of the body. Hypertonicity was present in the left arm and leg, along with resistance to passive movement. Pathological toe signs were all present.

He was seen first in the physical therapy clinic on Oct. 13, 1955. On initial examination it was observed that he walked in a jerky, uncoordinated manner. His gait was not typical of the "classical" hemiplegic gait. The knee was carried high in the swing phase, the extremity was externally rotated, and the foot demonstrated extraneous movements with a predominance of peroneal action. The arm was abducted and externally rotated with the elbow flexed, and the wrist showed athetoid-like movements of flexion and extension. Strength of all involved muscles was good. Although the patient could perform a skilled motion such as touching the thumb to each finger in succession, this was performed rather laboriously, and required close attention. Tasks requiring bimanual activity, such as tying a shoelace, were much more difficult.

Staff Physical Therapist, Letterman Army Hospital, San Francisco.

Although the patient was ambulatory when first seen in the physical therapy clinic, it was felt that the gait pattern could be controlled sooner by confining him to a wheel chair. Except for treatment periods this was continued until a better balance between antagonists and agonists was achieved. Treatment periods in the clinic were directed toward stimulating a smooth gait. In addition to gait training in physical therapy, the patient also reported daily to occupational therapy for coordination activities for the upper extremity.

Some of the technics of neuromuscular facilitation as applied by M. Rood were utilized in attempting to correct the patient's gait. Initially, the greatest problem in the gait was that of the strong peroneal contraction, both in the swing and stance phase. This action was so evident in the stance phase that the lateral arch of the foot was considerably elevated, and the foot assumed somewhat of a valgus position. The first problem was to stimulate the tibialis anterior so that it would contract in the swing phase. Since the swing phase is essentially a part of the withdrawal pattern, the flexors of the hip and knee were stimulated in addition to stimulating the tibialis anterior. This was accomplished by brushing with a small brush of hog's bristle in the area of isolated innervation of the deep peroneal nerve for activating the tibialis anterior and great toe extensor; and by brushing in the saphenous area for activating the iliacus and sartorius.

Since stimulation through the sensory system augments or facilitates motor response, each of the areas was brushed for a few seconds. The patient was then asked to dorsiflex the foot actively with hip and knee flexion. In order to stimulate the tibialis anterior further for its function in heelstrike

and stance, the heel of the foot was pounded, pressure was applied over the tendon, and voluntary dorsiflexion was resisted. It is felt that pressure on the heel simulates the action of heelstrike which normally brings the dorsiflexors into play. Pressure over the tendon stimulates pressure receptors near the tendinous insertion as well as proprioceptors of the muscle. After stimulation on the plinth the patient practiced an exaggerated gait in the parallel bars. He was instructed to walk with a high knee raise to bring in the tibialis anterior in the swing phase, and to exaggerate the heelstrike to stimulate the dorsiflexors of the foot. The right foot was kept behind the left foot so that there would be no peroneal or plantar flexor stimulation by weight coming onto the ball of the foot. The gait was practiced barefooted to remove any stimulus from a shoe. This was practiced for one week, and the peroneal action was completely eliminated. At the end of the week the high knee raise was partially cut out, and only resorted to when the peroneals again showed a tendency to be overactive.

After the first 10 days of treatment with steady improvement, the gait suddenly regressed. It was felt that the regression was due to the fact that the patient had been working on a sanding project in the occupational therapy clinic which required additional standing. This activity was changed, and the gait once again showed improvement. At this time there was an increase in plantar flexion during the swing phase, but with additional brushing on the dorsum of the foot the plantar flexion disappeared.

By Nov. 8, 1955, the patient was started on a normal gait pattern, rather than the one presently used with the left foot in advance. The additional stimulus the patient now received with his weight coming on the ball of the foot caused an exaggerated plantar thrust and again too much peroneal activity. However, with concentrated stimulation of the tibialis anterior by brushing, pressure, heel pounding, and occasional stimulation of the tibialis posterior by pressure over the tendon and in the arch of the foot, the gait became fairly smooth. As the gait became more normal, the arm also improved in that it hung with no external rotation or abduction and only slight elbow flexion.

The gait continued to be good, except for slightly more than normal plantar thrust until November 22, when the patient tried walking with shoes. The additional stimulus of the shoes once again set up hyperactivity of the peroneals along with increased plantar thrust. A small pad was inserted in the shoe so as to increase pressure under the lateral heel in an attempt to facilitate tibialis anterior action at heelstrike and thus eliminate the action of the peroneals. This had only minimal effect.

Applications of ice were then tried in an attempt to relax the peroneals. Wrapping cold, wet towels around the leg helped slightly to reduce the hyperactivity of the peroneals, but rubbing an ice cube over the entire peroneal masculature and concentrating it over the tendons, was more effective. Peroneal activity was eliminated almost completely with the ice cube application. Stimulation of the invertors was continued at the same time.

In the middle of December an arch support which had been roughened at the peak of the arch was inserted in the left shoe. It was hoped that this would provide minimal irritation to the sole of the foot and that this irritation would be sufficient to stimulate the invertors to greater activity, and thus decrease peroneal activity. The stimulation given by the arch support worked well, and by the first week of January 1956, muscle balance seemed so much improved that the support was removed.

The patient walked well until early in February when he was moved to an outlying ward of the hospital. The additional walking necessitated by the move and the resultant fatigue again produced an overactive peroneal gait. The gait was so adversely affected by the increased activity that the patient was returned to his original ward with a resulting improvement in the gait.

From late in February until April, 1956, when the patient was discharged from the hospital and from the army, the gait remained fairly stationary. In a controlled environment the gait showed a decrease of peroneal activity, but with too great an increase in the patient's activity the gait would regress.

COMMENT

From the foregoing it can be seen that various methods of stimulation through the sensory system did have a definite effect on the hemiplegic gait of one patient. Although the overactivity of the peroneal muscle group was never eliminated completely, it was controlled temporarily and for varying lengths of time.

APTA-OVR Institute Manuals

Following the first two APTA-OVR Institutes, the papers presented were printed in manuals, "The Correlation of Basic Sciences with Kinesiology"—1955, $4.50; and "The Correlation of Physiology with Therapeutic Exercise"—1956, $2.95. Only a few copies of each remain and there are no plans for reprinting. It is suggested that if you wish to have these manuals you place your order now.

Suggestions from the Field

A Gripper Glove

Harold Glicklin, B.S.

There are several types of exercise gloves for the use of patients who are unable to grasp with one or both hands. Almost every physical therapy clinic uses one of these devices when it is necessary for patients with spastic or flaccid paralysis of upper extremities to hold on to a weight, pulley handle, or other apparatus used for stretching or strengthening the extremity.

The difficulty encountered in putting a glove on a spastic or a flaccid hand prompted the author to develop the glove described here. It has been tested with various patients, and the results have indicated that it would be useful equipment in a physical therapy department.

Physical Therapist, Hebrew Home for the Aged, Hartford, Connecticut.

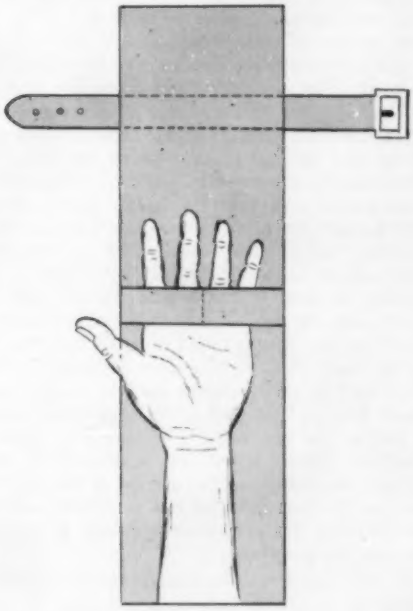

Figure 1.

Advantages of the glove are: One size fits any adult hand; it may be used for left or right hand; the cost is negligible; it is simple to construct; many patients can apply it themselves; and its use saves time for the physical therapist.

Materials needed are:

heavy cotton twill, sailcloth, or any other strong and durable material—5 inches by 18 inches

elastic tape, 5/8 inch by 5 inches

web belt approximately 1 inch wide and 12 inches long with an adjustable buckle on one end

Instructions for making the glove:

1. Place the elastic tape in the center of the twill fabric, width wise. Sew each end of the tape to the material.

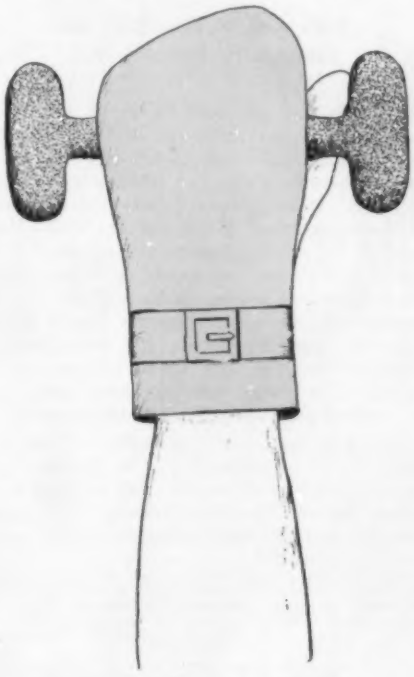

Figure 2.

2. Tack the center of the tape to the material, dividing it into two sections.
3. Sew a neat ¼ inch hem around the entire fabric. This is the inside of the glove.
4. On the outside, sew the web belt 2¾ inches from either end of the fabric. The belt should be centered.

To use the glove:

With the end to which the strap is attached facing away from the wearer, slip the first and second fingers into one compartment of the elastic band as far as the metacarpophalangeal joints. The third and fourth fingers are placed in the second compartment (Fig. 1). Wrap the fingers around the object to be grasped, bringing the belt around the wrist, and secure the belt on the dorsum of the wrist over the fabric (Fig. 2).

A Simply Operated Standing-Board

Ruth Ann Huber, B.S., and
George H. Koepke, M.D.

Physicians and physical therapists everywhere recognize the physiological and psychological values of having severely disabled nonambulatory patients assume a standing position a portion of each day. At the University Hospital, University of Michigan, many of the patients in the Poliomyelitis Respirator Center are so severely involved that it does not appear to be practical to stand them with braces. Because of this, and the general need for some relatively simple and inexpensive standing device, the Department of Physical Medicine and Rehabilitation has developed a "one-man standing-board" to be used for selected patients in the Respirator Center.

Although this board resembles others now available, it differs in that it is operated from a rocking bed by means of a bar attached to the foot of the bed. One attendant can help a patient onto this board, which makes the device especially useful in the home care of patients. The dimensions and mechanical details are given in figure 1.

In using the board, the first step is to switch off the bed's motor and disconnect the wall plug from the outlet—an important safety precaution. The patient is moved to one side of the bed and the board placed beside him (Fig. 2). The patient is then turned on his side and the board positioned so that he may be rolled back onto it. The shoulders and hips are adjusted so that he is straight and comfortable; some patients will want padding under bony prominences. Straps are secured around knees and hips, and the shoulders if necessary. It may be desirable to place a small roll under the knees. The hands are tied together to hold them safe while the board is being raised. The rocking bed is then tilted down about 15 to 20 degrees by means of the manual control, to make it easier to slide the board onto the bar. The board is pulled forward until the bar engages and is locked in the slot on the back of the board (see diagrams). Now the board is easily swung upright on the horizontal bar, so that the bottom edge of the board is resting on the floor (Fig. 3). The angle at which the patient is standing is adjusted through manual control of the inclination of the bed. Returning the patient to the bed is simply a matter of reversing the procedure followed in gaining the upright position.

A desk board may be attached to the standing-board by means of slots on either side. Enough slots are provided so that the desk can be ad-

From the Department of Physical Medicine and Rehabilitation, University of Michigan Medical School and University Hospital, Ann Arbor, Michigan. Ruth Ann Huber, Senior Staff Therapist, Poliomyelitis Respirator Center; George H. Koepke, M.D., Assistant Professor of Physical Medicine and Rehabilitation.

The Poliomyelitis Respirator Center is supported by a grant from the National Foundation for Infantile Paralysis, Inc.

List of Parts

1. Bed bracket
2. Slide lock handle Sub assembly — see drawing
3. Lap board Sub assembly — see drawing for parts
4. Back board
5. Footboard
6. Footboard brace
7. Footboard angle
8. Overhead bar (2)
9. Overhead bar lock clips (2)
10. Slide lock bar
11. Slide lock block
12. Slide lock bar guide (2)
13. Slide lock block guide
14. Slide lock plate
15. Upper skid stick (2)
16. Lower skid stick (2)
17. Bearing plate (2)

Miscellaneous screws as required

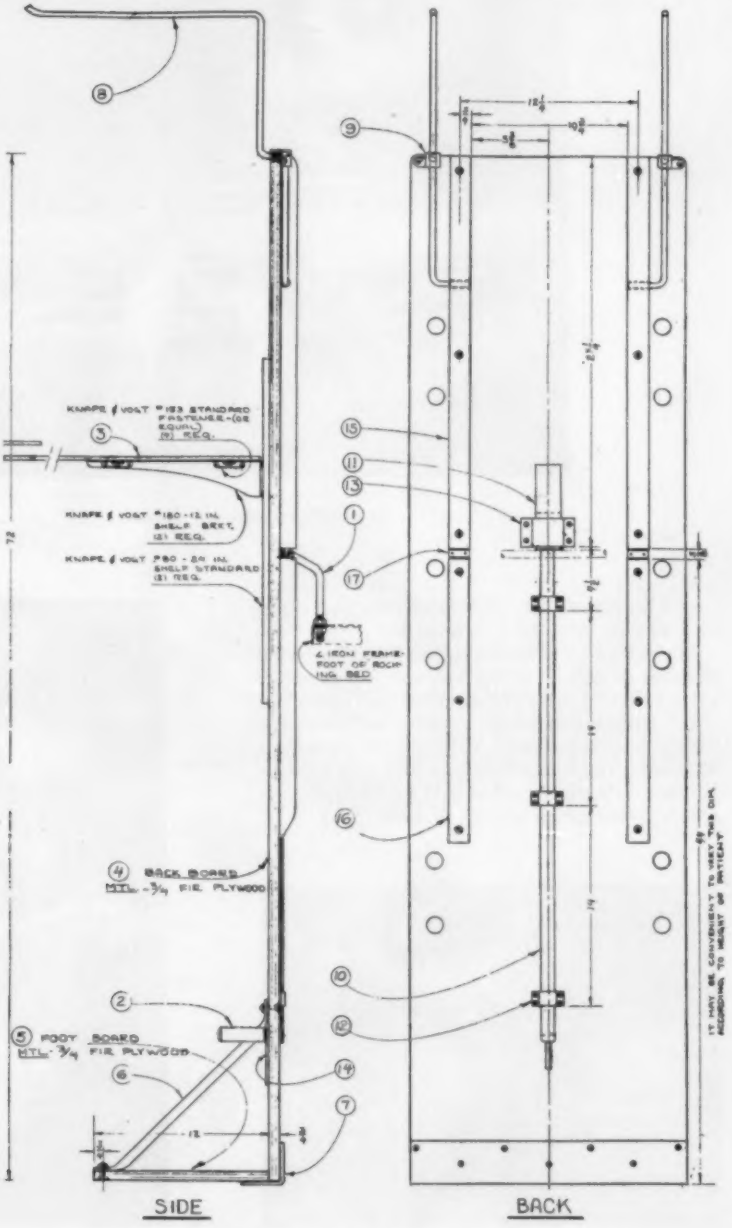

***Figure* 1. Standing-board assembly**

Figure 2. Positioning patient.

justed to any height. Overhead bars and slings also may be attached if indicated.

Several patients have used the standing-board at home as well as in the hospital. Its moderate price ($65.00), ease of operation, and convenient size for storage under the rocking bed, make it a highly practical device. Although our experience has been gained in connection with poliomyelitis patients only, the board should be readily adaptable to other quadriparetic patients.

Figure 3. Lowering patient to upright position.

Figure 4. Upright position with overhead bars and slings—desk board attached.

SHORT TERM COURSES FOR GRADUATE PHYSICAL THERAPISTS

Title of Course	*Sponsor of Course*	*For Details Contact*	*Dates of Course*
Cerebral Palsy	The North Carolina Cerebral Palsy Hospital Durham, North Carolina	Edna Blumenthal Director of Rehabilitation No. Carolina C. P. Hosp. Durham, North Carolina	Courses offered every 3 months—dates arranged according to individual need
Postgraduate Cerebral Palsy Courses	Columbia University College of Physicians & Surgeons	Office of the Dean Postgrad. Course in C. P. College of Physicians and Surgeons 630 West 168th St. New York City, N. Y.	Oct. 14 — Dec. 13, 1957 March 3 — May 2, 1958
Technics of Neuromuscular Reeducation	California Rehabilitation Center Vallejo, California	Margaret Knott Chief P. T. Calif. Rehab. Center Vallejo, Calif.	October 1 January 1 April 1
Advanced Course in Physical Rehabilitation Methods	NYU-Bellevue Med. Cen. and NYU Sch. of Education	Mrs. Edith Lawton, Dir. Courses for Physical Therapists Institute of P. M. & R. 400 E. 34th Street New York City, N. Y.	Nov. 18 — Dec. 13, 1957 Feb. 3 — 28, 1958 Apr. 28 — May 23, 1958
Physical Therapy in the Care of Neuromuscular Disease	Georgia Warm Springs Foundation Warm Springs, Georgia	Robert L. Bennett, M.D. Medical Director Ga. Warm Springs Found. Warm Springs, Georgia	January April October
Postgraduate Course in Technics of Treatment	The Children's Rehabilitation Institute for Cerebral Palsy Reisterstown, Maryland	Christopher H. Wiemer Executive Director Children's Rehabilitation Institute Reisterstown, Maryland	Oct. 7 — December 20

Research Grants Available

The Easter Seal Research Foundation of the National Society for Crippled Children and Adults provides grants-in-aid for investigations concerned with the prevention and treatment of physical and associated disabilities, and the rehabilitation of the physically handicapped. Disabilities may be congenital or may result from accident or illness. Accident prevention, per se is outside the scope of the Foundation's research interest.

Funds for research grants are derived from a fixed percentage of the gross returns of the annual Easter Seal campaign conducted by the National Society and its state and local affiliates.

The Foundation is concerned with investigations of (1) the causes of crippling, (2) the prevention of physical disabilities, (3) methods for improving impaired functions or for mitigating the results of dysfunction, and (4) measures for enhancing the effectiveness of the rehabilitation process. Research projects may involve basic or clinical research or both.

The Foundation invites applications for grants-in-aid. Applications filed between September 1 and March 31 are reviewed in June. Applications filed between April 1 and August 31 are reviewed in November. Awards are anounced during the months of June and November. Requests for additional information should be addressed to 11 South LaSalle Street, Chicago 3, Illinois.

Editorial

One Source of Supply

The issue of "shortage of personnel" is not ours alone. All branches of the health field are confronted by the same problem. The fact that the problem is shared by others is no reason for complacency, rather it is a reason for positive thinking and action.

"Shortage" can become an accepted idea with an attitude of resignation which adversely affects the caliber and frequency of treatment rendered, or it can be the stimulus for an objective evaluation of the causes of "shortage" and the development of a concept of what can be done.

The time-worn "treatment" for "shortage" has always been and still is "to produce" more trained people. This is being done through intensive and continuous recruitment activities, mainly with high school and college students. There seems to be no sign that the problem will diminish for many years although recruitment activities are effective. There simply are not enough young people to fill the needs of all professions. There is an ever increasing demand for physical therapists as the result of growth in population, increased longevity with concomitant long-term illness, and the broadened knowledge and appreciation of physical therapy.

One approach conducive to relief of the "shortage" has included making the work of the physical therapist more attractive. Hospitals and agencies are learning that it pays to establish and maintain effective personnel policies and practices not only to recruit staff but to retain staff. Opportunities for related advanced study and research are becoming a reality.

In spite of the foregoing, there are signs that not enough is being done to hold a great segment of physical therapists, especially women. Perhaps there is a need to mobilize and use the reserve pool of physical therapists which has developed through the years.

Many women physical therapists marry, retire, and remain inactive. Is housekeeping and child-rearing the only reason that keeps these people from returning to or participating in their profession? Could ineffective use of their talents be a reason?

Is this source of supply overlooked because these physical therapists are unable to meet a rigid schedule of full-time employment or work a complete morning or afternoon as half-time employees?

In considering ways to encourage reactivation a thought comes to mind repeatedly—do present day policies and practices reflect the past when the majority of career physical therapists were single women and those who were married were content with a short career and retirement? Today is an entirely different era in which women have moved into industry, business, and the professions. This has made a great impact on family and community life and on employment conditions for women. Out of this movement has developed the "working couple" pattern of life and greater opportunities for women. There no longer is "sole dedication" to a profession but rather a diversity of interest; i.e., profession, job, family, and community. Who can deny that a more balanced social and professional life makes for an integrated personality better able to work with those in need of rehabilitation? Use of these women workers with their diverse interests presents the need for flexibility in work schedules, and type of work performed so as to accommodate for necessary time related to child-bearing and rearing. Perhaps hospitals and other health institutions ought to develop an awareness of these facts and utilize women according to their abilities and availabilities. Yes, there would be problems of administration but such a policy might not be as burdensome as the present problem of shortage.

Perhaps in our efforts to relieve the "shortage of personnel" it is necessary to know what conditions would encourage inactive physical therapists to return to full or part time work.

I do not know the answers but I believe investigation of this one source of supply might clarify what can be done in addition to recruiting students.

Mary E. Callahan
New York, New York

Association Receives Grant from National Foundation for Education and Recruitment

The American Physical Therapy Association has received a March of Dimes grant of $68,570 from the National Foundation for Infantile Paralysis effective July 1, to continue our program of consultant service to physical therapy schools, liaison with allied professional groups, student recruitment and career guidance activities.

Since 1941, March of Dimes grants to the American Physical Therapy Association have totaled $873,822 including the new award.

In announcing the grant, Basil O'Connor, president of the National Foundation, explained that other grants since 1945 have supported training of a number of physical therapists equal to one-third of all those practicing today. He warned that "polio and other patients, cannot receive the quality of care they must have unless there are sufficient numbers of qualified personnel."

Mary Haskell, Executive Director of the Association, called attention to the acute need for more physical therapists despite intensive recruitment programs. It has been estimated that approximately 10,000 additional physical therapists should be trained within the next five years.

Thirty-seven schools across the nation, approved for training of physical therapists, show a steady increase in enrollment which has grown from 585 in 1952 to 800 in 1956. The grant to the American Physical Therapy Association is part of a vast March of Dimes professional education program aimed at helping improve the quality and kinds of care available to patients. The American Physical Therapy Association recognizes a great responsibility in the administration of this grant for the mutual purposes expressed by the two organizations.

Association News

Etta J. Underwood passed away recently in Salt Lake City, Utah. Miss Underwood, a graduate nurse of Salt Lake General Hospital, received the certificate in physical therapy at the University of Southern California in 1948. She served with the Army Nurse Corps during World War II prior to studying physical therapy. As a physical therapist she was employed in the Los Angeles, California area and by the California Elks Association in Indio, California. Miss Underwood became a member of the Association in 1948 and had been affiliated with the Southern California and San Joaquin Valley Chapters.

Chapter News

Michigan—Eastern District

The role of the Physical Therapist in Civil Defense was the topic of Eastern District's program in May. The April newsletter carried a report of the survey conducted through the newsletter to determine the subjects of choice for educational programs. Subjects in order of preference were proprioceptive neuromuscular facilitation technics, pathological gaits, orthopedic appliances, progressive neuromuscular disorders and civil defense.

Northern California—San Jose District

"The financial arrangement between the Northern California Chapter and the San Jose District has been most satisfactory. To simplify matters, the Chapter votes a $75.00 budget to the District. If a worthwhile project requires more than that amount, the Chapter will consider supplementary allotments. If the District does not use the original budgeted amount, it is expected that they will not request the full $75.00 the coming year.

"After a rocky two year period, the San Jose District is well organized and determined to bring the A.P.T.A. members, in this area, into more activity professionally. We have a monthly business meeting and a round table discussion, led by a different therapist each time. Every second month we have a local physician speak on various subjects. At these meetings we invite the Occupational Therapy students from San Jose State College, Physical Therapy students from Stanford University, physicians and other interested groups. These meetings have drawn an attendance of up to sixty people, regularly."

Comments on Chapter-District Interrelationships were received from Edward J. Rathjen, Chairman, San Jose District.

Physical Therapy Practice Act in Alaska

The Territory of Alaska's legislature recently passed Senate Bill 37 thereby enacting into law permissive registration of physical therapists. Two physical therapists who are registered in Alaska will assist the Territorial Medical Board with the administration of the law. The examination used will be the one provided by the Professional Examination Service of the American Public Health Association. Reciprocity is granted with those states having substantially equal requirements and where a similar privilege is accorded.

Physical Therapy Legislation in Nebraska

Nebraska is the twenty-sixth state to enact legislation regulating the practice of physical therapy. The law provides for a Board of Examiners in Physical Therapy to assist the Nebraska Department of Health in the administration of the law. The practice of physical therapy in Nebraska is now limited to those who meet the qualifications set forth in the law and who are duly licensed by the Department of Health.

Physical Therapy Legislation in Vermont

Vermont is the twenty-seventh state to enact legislation regulating the practice of physical therapy. The law provides for a Board of Physical Therapy Registration to administer the law. The practice of physical therapy in Vermont is limited to those who meet the qualifications set forth in the law.

What the Institute Meant to Me

Violet R. Pfeiffer, 1st Lt., AMSC, USAR

Every physical therapist is a leader or potential leader and must develop his administrative, organizational, and technical abilities. We need to utilize every opportunity for new learning experiences and we are dependent upon each other for professional growth. Development of better patient care by improving administrative practices was emphasized at the 1956 Institute for Physical Therapists which is conducted annually by the American Hospital Association in cooperation with the American Physical Therapy Association.

The discussion on medicolegal aspects of physical therapy opened the door to a vast area of vital information. A warm, friendly atmosphere is the best protection, and adequate written records are our best witnesses in court. We should evaluate our work areas and habits to determine if hazards to safety exist and should then eliminate all hazards to patients and personnel.

Another phase of the Institute was that of interpersonal relationships. Every business is becoming more aware that good communication is as important as the technics of the job itself. Responsibilities are no longer pigeonholed as belonging to a single person or a single department. Each of us plays a part in welding our position into the whole.

The financial management of a physical therapy department was discussed in a meaningful way. Personnel who are cost conscious learn to provide greater service to more patients and, in turn, the staff becomes eligible for increased benefits.

At the Institute I broadened horizons and received assistance which will improve my daily work. It is by these individual gains that we develop the potential and achieve progress for our profession.

AHA—APTA Institute for Physical Therapists

Announcements of the Institute for Physical Therapists to be held at the Somerset Hotel in Boston on November 4-8, 1957, have been mailed to APTA members.

The Institute, sponsored by the Massachusetts Chapter of the APTA, has been made possible through the cooperative efforts of the American Hospital Association and the American Physical Therapy Association.

The final plans for the program, with speakers and leaders for the sessions and discussion groups, have been made. Problems and questions raised by physical therapists and hospital administrators have been considered in planning sessions on administration, financing, medical-legal implications, establishing new services and developing existing services.

Discuss this opportunity with your administrator. Send your application to attend—promptly.

Marriages

Bon Nel J. DeMers, of Medford, Ore., now Mrs. Bon Nel D. Walker, Medford.
Helaine Dobishinsky, of Chicago, Ill., now Mrs. Helaine D. Hull, Chicago.
Helen E. Field, of Buffalo, N. Y., to Steeg L. Johnson, Buffalo.
Mary A. Gadacz, of Seattle, Wash., now Mrs. Mary G. Nixon, Seattle.
Laura Gleason, of Cleveland Hts., Ohio, to Don Chamberlain, Snyder, N. Y.
Saida M. Gonzalez, of Rio Piedras, P. R., now Mrs. Saida G. Garcia, Rio Piedras.
Barbara Ann Goss, of St. Louis, Mo., now Mrs. Barbara G. Fletcher, St, Louis.
Margaret Heffernan, of Milton, Mass., to Robert Laughlin, Norwood, Mass.
Madelene Jong, of San Francisco, Calif., now Mrs. Madelene J. Quey, Berkeley, Calif.
Nancy Lund, of San Francisco, Calif., now Mrs. Nancy L. Symons, Daly City, Calif.
Grace Mayemura, of Los Angeles, Calif., now Mrs. Grace M. Fukuto, Los Angeles.
Anna Richardson, of Bala Cynwyd, Pa., to Albert Mathis, Bala Cynwyd.
Shirley Rocha, of Richmond, Va., now Mrs. Shirley R. McCue, Columbus, Ga.
Hazel Royall, of Warm Springs, Ga., to Basil O'Connor, New York, N. Y.
Donna E. Simbro, of Oklahoma City, Okla., to Peter Stadler, Oklahoma City.
Helen Skrabut, of Sewickley, Pa., to Michael Timko, Sewickley.
Marilyn R. Strickland, of La Crescenta, Calif., to William M. Jenkins, Los Angeles, Calif.
Elizabeth Thompson, of Milton, Mass., to Norman E. Hansen, Boston, Mass.
Phoebe A. Wolfe, of Ann Arbor, Mich., to Roger P. Vance, Royal Oak, Mich.

New Student Members

Boston University
Donald Woodworth

College of Medical Evangelists
Leonard Hultgren, Jr. William J. Luke

Stanford University
Mary Rice

University of Connecticut
Frances Butler Shirley Dickie

National Office Statistical Reports....

Department of Chapters and Membership

Membership Report—1956-57

Membership:	May 1, 1956	May 1, 1957
Active	5,008	5,336
Inactive	1,450	1,568
Associate	42	45
Honorary	9	8
Life	49	58
Student	780	983
Total	7,338	7,998

New members:	
Active	657*
Associate	4
Honorary	1
Reinstatements:	
Active	46
Inactive	4
Life	1
Transfers:	
Active to Inactive	290
Inactive to Active	87
Active to Life	9
Inactive to Life	2
Resignations:	
Active	34
Inactive	33
Deceased:	
Active	7
Inactive	2
Life	3
Honorary	2
Dropped for non-payment of dues:	
Active	122
Inactive	52
Associate	1

* Includes 49 who were not recent graduates and 17 foreign trained.

The following members passed away during the year 1956-57:

Elizabeth Ammerman	Elizabeth Saur
Edythe Bingham	Stella Shepherd
Marguerite Collins	Aurline Sinclair
Barbara Donaldson	Katharina Van Ness
James Mennell, M.D.	Lucile Vosgerau
John Ryan	Elin Wiswald
Frances Ryder	Andrew Woods, M.D.

Foreign Trained—1956-57

Candidates who completed the period of supervised employment and satisfactorily completed the qualifying examination: 18

These physical therapists were trained in the following countries:

Australia	1	Germany	4
Canada	4	Great Britain	7
Denmark	1	Sweden	1

Candidates who completed period of supervised employment but failed one or more parts of the examination and did not retake: 2

These candidates were trained in the following countries:

Germany	1	Sweden	1

Candidates accepted for full membership after completing two-year program: 1

Candidates now completing period of supervised employment and scheduled to take examination in the future: 26

These 26 candidates were trained in the following countries:

Canada	3	Great Britain	13
Denmark	3	Norway	2
Germany	2	Sweden	3

NOTE: See additional information in report of the Department of Professional Services regarding physical therapists from foreign countries who did not complete requirements for membership and were transferred to our closed file.

Field Service—1956-57

During the year consultants from the National Office visited chapters, districts, or chapter executive committees as follows:

Arizona
Northern California
Connecticut
Georgia
Idaho
Illinois
Louisiana
Maine
Massachusetts
Michigan
Minnesota
Mississippi
Montana
New Mexico
New York Districts
  Central
  Eastern
  Greater New York
  Hudson Valley
  Southern Tier
  Western
Ohio
  Northeastern District
  West Central District
Oklahoma
Texas
Utah
Vermont
West Virginia
Wisconsin
Wyoming

Chapter Representation

The following chapters are represented on the Board of Directors and national committees, or have members serving as section officers and Association representatives:

Northern California
Southern California
Colorado
Connecticut
Delaware
District of Columbia
Idaho
Illinois
Indiana
Kentucky
Massachusetts
Michigan
East Missouri
West Missouri
Nebraska
New York
North Carolina
Ohio
Oklahoma
Pennsylvania
Texas
Utah
Virginia
Washington
Wisconsin

Chapter News in *Physical Therapy Review*

Chapter news items were submitted through chapter or district newsletters as follows:

Northern California
San Diego, California
Connecticut
Iowa
Illinois
Louisiana
Massachusetts
Michigan
  Eastern District
  Western District
Eastern Missouri
Nebraska
New Hampshire
New Mexico
New York
  Greater New York District
Ohio
Oregon—Southern District
Pennsylvania
  Eastern District
  Western District
South Carolina
Texas
  Southeast District
Vermont
Virginia
Washington

Chapter Bulletins

In addition to correspondence with chapter and district officers, bulletins containing information on Association activities and guidance to chapters and districts were sent from the National Office in August, 1956, and January and March, 1957. Special subjects presented with chapter bulletins included:

Chapter and District Interrelationships
Program Development
Chapter Treasurer's Annual Report
Potential Members
Planning for Mass Casualties

Department of Professional Services—1956-57

Placement Service

Service to APTA members

139 Presently receiving assistance
225 Removed following written report of acceptance of new position
364 Total receiving assistance

Service to prospective employers (hospitals, clinics, etc.)

420 Currently active
41 Pending additional information for activation
461 Closed following written announcement that positions had been filled
922 Total receiving assistance

Poliomyelitis Assignment Service

5 Physical therapists were on temporary polio assignments on May 1, 1956.
43 Assignments of physical therapists for temporary duty during polio emergencies were made.
2 Physical therapists cancelled their assignment before reporting for duty.
38 Assignments were terminated as the emergency situation lessened.
6 Physical therapists were on temporary poliomyelitis assignments on April 30, 1957.
32 Physical therapists served on temporary polio assignments during the year with seven of them serving on more than one assignment.

Poliomyelitis Assignment Service (*continued*)

Physical therapists were assigned for temporary duty in the following states:

Arkansas	Mississippi
Idaho	North Carolina
Illinois	Oklahoma
Louisiana	Texas

Foreign Trained Physical Therapists

A. Entering the United States on an immigration visa:

- 26 Meeting requirements for membership with the APTA on a probationary status.
- 42 Pending approved employment or payment of fees.
- 5 Applied but found not eligible for eventual membership with APTA.
- 8 Plans changed and did not arrive in the United States.
- 20 Completed probationary period and took examination for membership with APTA.
- 1 Completed probationary period and accepted for APTA membership on equivalency basis.
- 40 Did not complete probationary period.
  - 24 remaining in the United States.
  - 16 Left the United States.

142 Total receiving assistance

B. Entering on an Exchange-Visitor visa:

- 19 Receiving experience on traineeship basis with planning by APTA sponsored by:
  - 8 American Physical Therapy Association
  - 8 American Scandinavian Foundation
  - 0 Atlantique
  - 3 Other
- 30 Pending arrangements for traineeship.
- 10 Plans changed and did not arrive in the United States.
- 54 Completed traineeship and left the United States.
- 1 Married and terminated traineeship.

114 Total receiving assistance

C. Entering on a Visitor's visa:

- 6 Traveling for observation visits following guidances by APTA.
- 2 Plans changed and did not arrive in the United States.
- 36 Completed observation visits and left the United States.

44 Total receiving assistance

300 Grand total receiving assistance

Clinical Visits

By states and listing cities and number of facilities visited

*Arizona
Phoenix 3 — Tucson 2

California
San Francisco 2 — Vallejo 1

Connecticut
Bridgeport 1

Georgia
Atlanta 6 — Augusta 4
Columbus 2 — Milledgeville 1
Warm Springs 1 — Savannah 3

*Idaho
Boise 3

Illinois
Chicago 30

Kentucky
Harlan 1 — Pikeville 1
Hazzard 1 — Whitesburg 1
McDowell 1 — Williamson 1
Middlesboro 1

Louisiana
Alexandria 2 — Monroe 2
Baton Rouge 3 — New Orleans 10
Carville 1 — Shreveport 6
Lafayette 2

Maine
Bangor 1 — Portland 4
Bath 1 — Pownal 1
Houlton 1 — Rumford 1
Lewiston 1 — Togus 1
Limestone 1

Massachusetts
Boston 4

*Montana
Billings 4
Missoula 4

*New Mexico
Albuquerque 4

*New York
Albany 5 — Schenectady 3
Buffalo 2 — Syracuse 4
Rochester 1

*Ohio
Cleveland 9
Dayton 3

Oklahoma
Norman 1 — Tulsa 4
Oklahoma City 1

Texas

Abilene 2	
Corpus Christi 4	Lubbock 3
Dallas 3	Midland 3
Galveston 2	Odessa 2
Gonzales 1	Orange 1
Harlingen 2	San Angelo 2
Houston 13	San Antonio 5
Jacksonville 1	Tyler 1

*Utah

Salt Lake City 6

West Virginia

Beckley 2	Man 1

Total Facilities Visited 206

* Cooperation in making clinical visits provided by Consultant in Chapter and Membership Division.

Department of Professional Education—1956-57

ADVISORY SERVICES

A. Physical Therapy Programs—visits to 14 schools; guidance.
B. To 16 inquiries regarding prospective programs.
C. Career guidance; recruitment.
D. Teachers, prospective teachers.

MEETINGS—SPECIAL PROJECTS

A. APTA:

Advisory Committee on Professional Education—2; Board of Directors—2; Advisory Council; Section on Education; Annual Conference—World Confederation for Physical Therapy; Committee on Examinations; Committee to Evaluate the Preparation of the Foreign-Trained Physical Therapist.

B. Other:

Council of Physical Therapy School Directors—1 (and 2 regional meetings); Workshop on Clinical Practice at University of Connecticut; NFIP Scholarship (2) and Advisory Committee; AMA Congress on Medical Education and Licensure; AMA Advisory Committee on Physical Therapy Education; Students from Columbia University; UCP Scholarship Committee; Third Annual Workshop on Improvement in Human Relations, Boston University; Council of National Organizations Annual Conference; Adult Education Association Annual Conference; American Personnel and Guidance Association Annual Conference; Adult Education Association Community Leadership Institute; New York Personnel and Guidance Association; Personnel and Counseling Association of Boston University; National Association of Public School Administrators and Educators; Address to Sophomore Physical Therapy Students, Boston University; Address Pinning Ceremony, Physical Therapy Club, Boston University.

C. Special Projects:

APTA-OVR Institute and APTA Institute Committee; Strong Vocational Interest Study; Preparation of vocational guidance manual for counselors, librarians, and teachers; Career exhibit, American Personnel and Guidance Association Annual meeting; Survey to obtain data for 1957 scholarship brochure; Administration of United Cerebral Palsy Scholarship Fund; Preparation of chapter, "The Physical Therapist," for multi-authored textbook on rehabilitation.

ENROLLMENT ANALYSIS—compiled from figures submitted by the Schools for the 1956 Fall classes:

	1952	1953	1954	1955	1956
Final year enrollment (Senior and Certificate)	585	590	656	742	800

NOTE: The 1956 enrollment of 800 is a 36 per cent increase over the 1952 enrollment.

STATISTICS

A. *Guidance information*

Inquiries from:

	Responses Form Letters	Personal Letters	Office Interviews
Prospective students	5,508	285	29
Vocational guidance counselors	3,921	81	
Postgraduate study		38	7
Foreign-trained		25	5
Employment non-P.T. (camp, aides, etc.)		35	
Potential teachers			25

Special Project—Counselor's Manual—6,220 distributed

B. *Scholarship activities*

1. United Cerebral Palsy—27 awards averaging $360.00 each; 57 applications considered.
2. Revision of "Sources of Financial Assistance for Physical Therapy Students"—521 agencies surveyed; 23 national agencies listed; and 37 states and territories represented.

C. *Postgraduate study*

1. Short-term courses: 13 surveyed; 19 publicized in the *Review* a total of 74 times.
2. Graduate degree study: 27 letters of inquiry; 7 office interviews.

D. *Teacher recruitment:* 322 on file (272 old and 50 new listings).

Briefs sent to schools, 143; data on openings sent 999; 8 teachers placed; currently 12 vacancies in existing schools and 3 in prospective schools.

E. *Teaching aids*

Film data sheets sent monthly to faculties of 37 AMA approved schools and 2 prospective schools; to 18 members responsible for chapter programs and in-service training programs; and to 22 members requesting film information on specific subjects.

F. *Distribution of recruitment materials* (brochures, school lists, Fact Sheet, etc.) from the office:

1955-56	1956-57
366,789	387,751

Vocational Guidance Counselor's Manual—6,220

G. Requests received for information from chapters, counselors, libraries, prospective students:

1955-56	1956-57
8,510	10,088

Physical Therapy Review

Circulation and Advertising Report —1956-57

Total Circulation	1955-56	1956-57
Members	5,811	6,444
Nonmembers	1,273	1,518
Total	7,084	7,962
Increase in Circulation	193	878

Advertising	1955-56	1956-57
Pages of space advertising	139	187
Pages of classified	20	24
Increase of Advertising		
Pages of space advertising	16	48
Pages of classified advertising	5	4

Special Issues 1956-57

June 1956—Second Congress Issue

The Review goes to the following 64 foreign countries:

Algeria	1	Iran	2
Arabia	1	Israel	24
Argentina	4	Italy	11
Australia	52	Jamaica	1
Austria	2	Japan	5
Belgium	14	Jordan	1
Bermuda	1	Korea	2
Brazil	9	Lebanon	2
British E. Africa	1	Liberia	1
Canada	89	Mexico	15
Canal Zone	4	New Zealand	3
Canary Islands	1	Norfolk Islands	1
Chile	1	Norway	23
Colombia	5	Pakistan	2
Cuba	9	Peru	2
Curacao	1	Philippines	2
Czechoslovakia	3	Poland	4
Denmark	19	Portugal	2
Egypt	2	Scotland	1
England	44	Singapore	1
Finland	6	South Wales	1
France	11	Sweden	16
Germany	9	Switzerland	11
Greece	4	Thailand	2
Guatemala	2	Trinidad	3
Haiti	1	Turkey	3
Holland	17	Union S. Africa	11
Honduras	1	U.S.S.R.	6
Hong Kong	1	Uruguay	5
Hungary	1	Venezuela	3
Iceland	1	Yugoslavia	2
India	8	*W. Caroline Is.	1

1956-57	494
1955-56	408
Increase	86

* Protectorate.

Public Health Section

The Board of Directors recommended and the House of Delegates approved by unanimous vote the creation of the Public Health Section during the House of Delegates session on Wednesday, June 26, in Detroit.

The officers of the Section elected for two years are:

Chairman	— Clara Arrington, Washington, D. C.
Vice-Chairman	— Patricia Adams, Concord, Mass.
Secretary	— Anna Sweeley, Boise, Idaho
Treasurer	— Wilhelmina Werkhoven, Rockville, Conn.

The Public Health Section of the American Physical Therapy Association invites all those members of the American Physical Therapy Association holding any position concerned with physical therapy in a public health setting to join this Section.

Eligibility in this Section constitutes employment by a public or a private agency or institution, giving indirect or direct service, and serving in a capacity of an administrator, consultant,

educator, supervisor, or staff physical therapist.

Please send your name, address, place of employment, school of physical therapy, and year of graduation, with your dues to:

Patricia W. Adams
2 Sudbury Road
Concord, Massachusetts

The dues are one dollar annually, payable to: The Public Health Section, American Physical Therapy Association.

The Physical Therapist's Signature

Question

The use of initials following physical therapist's signatures has become confusing in that I have observed so many combinations: R.P.T., L.P.T., A.R.P.T., A.P.T.A., P.T. Would you please tell me what constitutes proper usage?

Answer

Physical therapists in all professional correspondence should be guided by the principles that govern business letters. The signature is composed of three parts: the writer's name (typed), and the dictator's title or profession. Example:

Helen Doe (handwritten)
(Miss or Mrs.) Helen Doe (typed)
Physical Therapist (typed)

When a physical therapist is writing as a representative of his employer the last line of the signature should always be the title of the writer. Example:

John Doe (handwritten)
John Doe (Typed)
Physical Therapy Supervisor (typed)

The correct signature for physical therapists registered or licensed under state legislation would be: the writer's name (handwritten), the writer's name followed by legal title or letters, giving state name issuing registration, then the professional title. Example:

Helen Doe (handwritten)
(Miss or Mrs.) Helen Doe, Registered Physical Therapist, North Carolina
Physical Therapy Supervisor (typed)

or

Helen Doe (handwritten)
Helen Doe, R.P.T., North Carolina (typed)
Physical Therapy Supervisor (typed)

It is not the accepted practice to list professional affiliations following one's signature any more than it is to list fraternal, social, or honorary organizations of which one is a member. Such memberships are listed on a personal data sheet, but the name of an organization is used following a proper name only when the person holds a duly appointed office in that organization and the business being conducted pertains strictly to that organization.

JUDICIAL COMMITTEE

CAROL VANCE

Ten Years of Service

In June 1957, Carol Vance, Managing Editor of the *Physical Therapy Review*, passed the tenth anniversary of her employment in the National Office. When in 1947 Miss Vance joined the staff of two consultants and two secretaries, she had as her duties those of mail clerk, receptionist-typist, and recorder of address changes. In 1950 when the Editorial Office of the *Review* was moved to New York from Chicago, Miss Vance became the Business Manager. Later in 1950, she assumed her responsibilities as Managing Editor.

Miss Vance, an English major at Ward-Belmont College, Nashville, Tenn., received a certificate and diploma from the Speech Department of Ward-Belmont. After college, she participated in theatrical activities—the legitimate stage, supper clubs, radio and stock companies. After two and one-half years in the United States Air Force, Miss Vance pursued educational courses in editing, publishing, and typing. She continued her educational endeavors at Colum-

bia University during the early years of her career with the APTA. To keep abreast with editing and writing Miss Vance is a member of the New York Chapter of the American Medical Writer's Association.

As managing editor of the *Review*, Carol Vance has the major responsibility for our professional journal. Editing copy, reading proof, planning the layout of the monthly issues, and correspondence with the advertisers are a few of the numerous tasks related to publishing a monthly magazine. Miss Vance has helped the *Review* to develop from a bi-monthly publication.

Increase in circulation is, of course, influenced by increase in membership and growth of the profession. However, the quality and appearance of the *Review* promote the interest of nonmember subscribers and advertisers. These, in turn, are important sources of income to the *Review*. Total circulation in 1950 was 4,958 compared with 7,962 in 1957. Nonmember subscriptions were 1,045 in 1950 and these have increased to 1,518. In 1950 there were 200 subscribers in 34 countries; this past year the *Review* had 494 subscribers in 64 foreign countries.

Space advertising in the *Review* has increased tremendously; the June 1950 issue carried a one-eighth page ad from a commercial firm; the June 1957 issue carried 17 pages of commercial advertising representing 24 advertisers. Classified advertising in the June 1950 issue numbered 5; 40 classified ads appeared in June 1957. The June 1957 issue with 80 pages was twice as large as the June 1950 issue.

Publication of the *Review* is a cooperative project. Members cooperate by submitting original manuscripts for publication, the *Review* Editorial Board accepts or rejects manuscripts and makes suggestions for change to the author and the managing editor; consultants in the National Office contribute copy for the Association Activities, Chapter and General News Section; Chapters contribute items for Chapter News through their newsletters; physical therapy students contribute items to the Student Column; the advertising representative secures new advertising and cooperates with the managing editor on details of placement and space. All of these cooperative efforts have contributed to the growth of the *Review*, but the final product is dependent upon the ability of the managing editor to assemble the components and fit them neatly together so that they emerge as an interesting, informative journal.

The Association, therefore, salutes Carol Vance for her contribution and service.

AMSC Celebrates 10 Years of Service

The Army Medical Specialist Corps climaxed its celebration at Brooke Army Medical Center of its completion of 10 years of growth and service in the U. S. Army Medical Service with an informal reception April 11, 1957, honoring corps chief, Colonel Harriet S. Lee, who visited the medical center.

The birthday party followed close on a program that introduced Colonel Lee and local Army medical specialists to the San Antonio community when more than 50 members of the corps appeared on the Tommie Reynolds Show that afternoon telecast by KONO-TV.

Colonel Harriet S. Lee, Chief of the Army Medical Specialists Corps, cuts the cake that marked the celebration at Brooke Army Medical Center of the corps' tenth anniversary as a chorus of physical therapists, dietitians, and occupational therapists sing a song composed for the occasion.

Student Column

Students Experience and Practice Teamwork

Teamwork in a Respirator Center

One of the unique experiences offered to the students of physical therapy at the University of Michigan is working in the Poliomyelitis Respirator Center at the University Hospital in Ann Arbor. The Center was established by the National Foundation for Infantile Paralysis in September, 1951, and was the third of its kind in this country. Today there are 15 respirator centers established in connection with medical schools and teaching hospitals throughout the United States. In addition to providing medical care for the patient, the Respirator Center has facilities for teaching and research purposes. The Center program is directed toward the fullest possible rehabilitation of the poliomyelitis respirator patient. Physical, psychosocial, and vocational aspects of rehabilitation are considered and are closely interwoven into each patient's program.

All of the patients are in one large room located on the top floor of the hospital. From this site, Ann Arbor and surrounding countryside can be seen, giving the center a pleasant atmosphere. The community type of living permits the patient to associate closely with other patients whose problems are similar to his. Since patients are of all ages and both sexes, a family type of atmosphere is created. The environment of the respirator center itself is an important feature in helping the patient to become less self-centered about his disability.

The physical therapy student spends two weeks of full time work in the Respirator Center during his clinical affiliation. Under the supervision of two experienced physical therapists, he gains experience in muscle testing, mobilization, muscle reeducation and strengthening, and functional training. In addition to the physical therapy procedures used in poliomyelitis, the student must learn proper use of tank respirators, chest shells, and rocking beds.

A typical patient's day may include physical therapy, occupational therapy, school instruction, medical and nursing care, and a visit from a social worker. All phases of the patient's rehabilitation program are directed toward evaluating his potentials and, finally, helping him to realize his abilities. Only through staff teamwork, cooperation of the patient, and participation of the patient's family, can the patient's potentials be utilized to their fullest.

Occupational and physical therapists work together to increase the patient's physical abilities and thus his independence. Patients are encouraged to develop new interests and are given opportunity to work on projects of their own choosing. These projects may give the patient a feeling of responsibility and accomplishment. A new skill such as typing may lead to a future vocation. Even those activities which are limited in their practicality can be physiologically and psychologically beneficial to the patient.

Schooling is provided for all children whenever possible, and for adults who can profit from it. When it appears that a child will be able to return to school in his own community, his education is kept at a level comparable to that at home so he may later continue school with his own age group.

University Hospital is fortunate to have both Appliance and Adaptive Equipment Departments. The poliomyelitis respirator patient almost always requires the services of both these departments. The Appliance Department provides equipment such as braces and corsets. The Adaptive Equipment Department supplies specific assistive devices such as hand splints and feeders.

The Social Service Department plays an important role in the respirator patient's rehabilitation program. The social workers, under medical supervision, may help the patient to solve certain psychological problems which could be interfering with his progress, and help him with a realistic adjustment to his disability. In addition, they attempt to help the patient's family adjust to the situation. The social worker may also be able to arrange for solution of financial or vocational problems.

Rest and recreation are considered an important part of the patient's program. Time is allocated for rest periods and recreation in the form of movies, television, and parties. Liberal visiting hours enable the patient to keep in close contact with relatives and friends. Many patients are permitted to go home for week-end visits.

Weekly conferences are held by all members

of the rehabilitation team for the purpose of discussing each of the patients at regular intervals. The patient's progress and achievements as well as his problems are considered at this conference. This approach brings about better evaluation of the patient and promotes intelligent and coordinated program planning. Experience seems to indicate that with specially designed facilities and experienced personnel working together, successful rehabilitation of even severely involved poliomyelitis patients can be achieved.

MARY ANN BIEDENHARN
University of Michigan

A New Idea

Teamwork in the rehabilitation of the hemiplegic became a reality in the open house presented this spring by the student physical therapists in conjunction with student occupational therapists and speech therapists and coordinated by Senior physical therapy student Carol Gonring.

The speech therapists, under the direction of Eileen Hunziker, began the program with slides and individual demonstrations illustrating the diagnostic tests, the Eisenson and Wepman tests for verbal and written comprehension, and the equipment used as therapeutic measures for aphasic agnosia and apraxia. This equipment included the tachistoscope, tape recorder, felt and letter boards, and language master.

A display of the devices and materials used by the occupational therapist in the recovery program of the cerebral vascular accident patient was explained by the occupational therapists headed by Mrs. Petra Jones. Crafts were shown, as were aids such as splints, slings, and adaptations of combs, tooth brushes, and eating utensils for activities of daily living.

Concluding the program, the physical therapists demonstrated the methods for proprioceptive neuromuscular facilitation, muscle testing, muscle reeducation, electrical stimulation, massage, motor function tests, functional activities, and underwater exercises. All these things have their place in the planned rehabilitation of the patient.

The importance of teamwork in this venture was most evident. The attending audience received not only a greater understanding of the activities of the speech, occupational, and physical therapists, but also of the contributions of each of the three fields to the hemiplegic's rehabilitation.

JEANETTE URBEN
University of Wisconsin

News From the Schools

University of Michigan

Two of the 16 students in the physical therapy class of 1957 at the University of Michigan recently have been elected to Phi Beta Kappa. The two honors go to Gayle Turner of Ferndale, Michigan, and to Esther Heyt of Grand Rapids, Michigan.

MARY ANN BIEDENHARN

Simmons College

Simmons College has announced that Audrey Haugaard, Senior in the Simmons School of Physical Therapy, has been presented with the Alumnae Scholarship Award. This award is given annually by the Simmons Alumnae to the Senior having outstanding scholarship throughout her college years and showing the most promise of success in her chosen field. Miss Haugaard is a former student editor of the *Review*.

VICTORIA REICHERT

Grady Vaughn

In preparation for the six-month clinical affiliation period now in progress, Grady Vaughn students added many additional activities to their already full schedules. Among these were a series of special lectures on cerebral palsy, poliomyelitis, and, at a chapter APTA meeting, a talk on "Hypnotism in Medicine." Three students were found to be particularly amenable to hypnotic suggestion.

Observation at post-mortem examinations in the final quarter of didactic study also proved to be valuable for follow-up information.

SHIRLEY HATHORN

University of Southern California

An annual award of $50.00 is given each year by Dr. Leonard Yamshon to the outstanding student selected by the PT Club and Faculty at USC. The criteria for selection as developed by the PT Club are as follows: scholarship, leadership, and service. The winner for 1957 was Robert Schofield. He was presented with the award by Dr. Yamshon at a luncheon on May 27.

TERRYL FAIT

General News

World Rehabilitation Fund, Inc.

Formation of a new voluntary organization to stimulate international understanding through sponsorship of international projects in rehabilitation of the physically handicapped was announced recently. The new organization is the World Rehabilitation Fund, Inc., of which Dr. Howard A. Rusk is the President.

Dr. Rusk also announced that the Fund's first international scholarship to bring physicians and other rehabilitation workers to the United States for advanced study had been created with a grant to the Fund from the American President Lines. Under the scholarship, known as the American President Lines Fellowship, a physician from the Philippines will be given a minimum of one year's advanced training in physical medicine and rehabilitation at the Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center.

The objectives of the new organization, Dr. Rusk said, are to (a) speed independent self-assistance in underdeveloped areas; (b) to make the contribution of the United States to the welfare of the disabled throughout the world better understood, and (c) to develop international understanding and friendship. The Fund hopes to achieve these objectives by grants to existing operating international agencies for special international rehabilitation projects.

Honorary chairmen of the new group include former President Herbert Hoover, former President Harry S. Truman, Mr. Bernard M. Baruch and Dr. Albert Schweitzer.

In expressing his hope that the Fund would be "eminently successful," President Eisenhower stated "Rehabilitation of the physically handicapped is of importance to all nations. By helping other peoples to help themselves, Americans express their concern for all mankind and their belief in the worth of each individual."

The new organization, Dr. Rusk explained, actually came into being in December, 1955, but no public announcement of the organization was made pending the development of initial financing support and conduct of a number of demonstration or sample projects. He cited a number of such projects: provision of artificial limb components to the Philippines and Thailand; assistance for study in the United States to physicians and other rehabilitation personnel from Haiti, Greece, Great Britain, Thailand, Poland, Belgium, the Philippines, and Brazil; provision of periodicals and books on rehabilitation to France, Poland, Russia, the Philippines and Australia; and sponsorship of rehabilitation demonstrations and conferences in Cuba, Indonesia, India, Denmark, Guatemala, Switzerland, Great Britain and the United States.

There will be no general public fund raising appeal in behalf of the Fund, Dr. Rusk explained. Financial support will come from corporations, foundations and individuals in the United States, he said, who share the Fund's view that "international rehabilitation projects express the belief of the people, industry and government of the United States that man's mission on earth is to heal and not to hurt, to build and not to destroy. We want the people of the world to see tangible evidence through work with the physically handicapped that American industry is interested in the welfare, not only of the workers who make its products and services, but those throughout the world who consume them."

The Fund which has tax-exempt status has its offices at 400 East 34th Street, New York 16, New York.

Professional Organizations Aid Vaccination Drive

Americans now are being vaccinated against polio at a rate of 2,000,000 a week—double the rate of 1956 and 1955—according to a recent report by Basil O'Connor, president of the National Foundation for Infantile Paralysis.

"The National Foundation is undertaking the most intensive educational campaign in its history to get everyone up to 40 vaccinated. The program has been endorsed and joined by the American Medical Association, Association of State and Territorial Health Officers, and the U. S. Public Health Service."

Mr. O'Connor especially commended professional organizations that are cooperating in the nationwide drive, among them the American Occupational Therapy Association, National Association of Social Workers, American Physical

Therapy Association, American Nurses Association, American Association of Nurse Anesthetists, American Association of Industrial Nurses, National Federation of Licensed Practical Nurses, and National Student Nurses Association.

These organizations have directed more than 300,000 individual appeals to their members to set examples in their communities by starting vaccination and to volunteer for service in polio vaccine clinics.

"Without their generous assistance," Mr. O'Connor said, "it would have been impossible to build up and maintain the pace of this unprecedented venture in disease prevention."

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Please direct all inquiries regarding tuition, entrance requirements and other specific information to the school and *not* to the American Physical Therapy Association.

Abstracts

Ophthalmologic Findings in Children with Cerebral Palsy

W. Schachat, H. Wallace, M. Palmer, and B. Slater (New York City Department of Health), PEDIATRICS, 19: 623-628, April 1957

Although it is well known that children with cerebral palsy may have other handicaps in addition to their locomotor disability, the presence of ophthalmologic defects has not been thoroughly considered.

This study used 98 children attending four special public school units for cerebral palsied children in New York City during the academic year 1954 to 1955. The children were 4 to 10 years old, moderately to severely disabled physically, and had intelligence quotients of 70 or better. The study form contained questions concerning antepartal and birth history, ophthalmologic history, and ophthalmologic findings. The examinations were made either by their usual ophthalmologic resources or the consulting ophthalmologist of the Bureau for Handicapped Children.

A total of 67 children (68 per cent) had either an ocular defect or a refractive error, or both. Of the 98 children, 52 children (53 per cent) had significant ocular defects and 53 children (54 per cent) had significant refractive errors. Twenty-two children received prescriptions for glasses, the parents of 7 children were urged to consider remedial surgery, and follow-up examination was recommended for 38 children.

In addition to advice regarding medical care, an attempt was made at the time of the study to aid those children with severe visual handicaps in the school environment. Such advice was indicated in 17 children (17 per cent). In 7 children, the best corrected sight was such as to require educational measures provided in a sight conservation class. Six others were thought to need such aid, but further ocular studies were indicated. It appeared that one child would need braille instruction, and one other child would require either sight conservation class or braille instruction.

When the children were classified according to types of cerebral palsy, the children with spastic types were found to have twice as many ocular defects and twice as many refractive errors as those with the athetoid types. Children with other types of cerebral palsy comprised such small numbers that no generalizations could be drawn.

The author recommends that a complete ophthalmologic evaluation of every child with cerebral palsy be included as part of the total examination, and that this specialist be a member of the basic health team responsible for the general care of the children.

Polycythemia Secondary to Respiratory Disturbances in Poliomyelitis

R. M. Cherniack, W. B. Ewart and J. A. Hildes (Department of Physiology and Medical Research, University of Manitoba, Winnipeg, Canada), ANN. INT. M., 46: 720-727, April 1957

This article deals with a survey of the hematologic status of chronic poliomyelitis patients with residual respiratory paralysis. Although the survey findings indicated that none of the hematologic values were definitely above normal limits, a fall in the hemoglobin and red blood cells with improved oxygenation supported the diagnosis of secondary polycythemia.

Forty patients confined to bed or wheel chairs as the result of respiratory and peripheral paralysis were given hematologic assessment. The survey disclosed that 4 patients who were getting no respiratory aids had the highest hematologic values with marked elevation of hematocrit, hemoglobin, and red blood cell count. A fifth patient, prior to the survey had congestive heart failure in the eighteenth month of his illness.

Arterial blood gases, vital capacities, maximal breathing capacities, and mechanical properties of the lungs were measured on these 5 patients. Thereafter, six to eight hours of daily mechanical respiratory assistance in the form of the rocking bed or the tank respirator were instituted for 4 of the 5 subjects. The fifth subject, already receiving two hours of daily respiratory assistance was maintained with his present routine. The effect of this treatment was followed by serial determinations of hemoglobin, red blood cell count, and hematocrit at least 12 hours after treatment and the pulmonary function study was repeated 12 to 18 weeks following onset of therapy.

Results of these tests showed that for the 4 subjects who had gradually been weaned from respiratory aid completely, hemoglobin levels rose as the respirator therapy was diminished and continued to increase during the period of no treatment. Reinstitution of mechanical respiratory aids resulted in a fall of hematocrit, hemoglobin, and red blood cells to a lower range. The fifth subject who received no additional therapy showed no change in his hematologic status. In all cases, neither the minute ventilations nor the grossly reduced vital capacities and maximal breathing capacities were affected by the therapy. Glossopharyngeal breathing did achieve marked increase in vital capacity, suggesting that the disability in these patients was due to muscular paralysis rather than diminished lung distention. However, compliance of the lungs was lower than normal and treatment directed simply at increasing alveolar ventilation caused no measurement changes. The arterial oxygen and carbon dioxide tensions, on the other hand, were markedly improved.

As a result of this study, it is evident that although chronic poliomyelitis patients are apparently doing well without respiratory aid, upon evaluation, the findings of elevated levels of hemoglobin, red blood cell counts, and hematocrits may signify the presence of inadequate pulmonary function and that special respiratory management of these patients would then be indicated.

Operative Treatment of Cerebral Palsy Involving the Lower Extremities

Caroll M. Silver and Stanley D. Snow (Miriam Hospital, Providence, Rhode Island), J. INTERNAT. COLL. SURGEONS, 27: 457-463, April 1957

This presentation represents an eight-year study of cerebral palsy in children from 1947 to 1955. During the eight-year period, 57 children were operated on, a total of 177 operative procedures being performed on lower extremities.

Specific operative procedures are discussed. Some of the operations performed were the gastrocnemius recession with section of the motor nerves to the gastrocnemius, adductor myotomy, Soutter operation for flexion contracture of the hip, lengthening of the achilles tendon, section of the hamstring tendon for flexion contracture, and others.

The authors stress that orthopedic surgical treatment is merely one

facet of cerebral palsy in children. An integrated team approach to the child is followed. Surgical intervention is never considered until diagnostic studies are complete and follow-up data available to justify an attempt to arrive at a prognosis. All patients are studied for at least six months prior to consideration of prospective surgical treatment.

Given definite clinical spastic deformities of the lower extremities, operations should be performed at an early age when developmental progress and abnormal neuromotor patterns appear fairly well defined. Three years seems the optimal age, and in the author's opinion the development of disabling secondary contractures are avoided when operations are performed at this time.

Early Recognition of Rheumatoid Disease with Comment on Treatment

Robert D. Gauchat and Charles D. May (State University of Iowa), PEDIATRICS, 19: 672-679, April 1957

In the past, rheumatoid arthritis in the age group of 15 years or under has been given little attention either by the pediatric or arthritic groups despite the fact that there are approximately 1,200 new cases each year.

The etiology of rheumatoid arthritis remains unsolved. Because children tend to manifest more vivid systemic reactions to many diseases than do adults, possible advances in our understanding of the pathogenesis of the disease may come from the study of the early stages of acute rheumatoid disease as seen in children.

This disease may have its onset at any age in children, but most commonly occurs during the second, third, and fourth years. In girls, there is a second peak during adolescent years. The onset may be widely variable—from an acute systemic illness preceding joint manifestations to a slow smoldering development of swollen joints and muscular debilitation with few gross systemic manifestations. This latter type offers no diagnostic difficulties and it will be disregarded in the subsequent description.

Clinical manifestations of the disease are: 1) fever which occurs suddenly with temperatures ranging from 40 to 41.2 degrees centigrade and which does not respond to salicylates or antibiotics; 2) rash which is present in 75 to 80 per cent of patients during the febrile period and appears to be an index of the disease process; and 3) arthralgia which may be as transitory as the rash and is not accompanied by redness, swelling, heat, or tenderness over the painful joint.

The heart is involved in rheumatoid disease more frequently than is generally realized. Acute carditis accounts for a high proportion of the deaths from the disease. Prognosis for the heart in patients who survive is good. Pleuritis and pneumonitis may be associated with the carditis. Abdominal pain, sudden in onset and suggesting acute appendicitis or peritonitis, is another acute manifestation of rheumatoid disease. There may be encephalitic and ophthalmologic manifestations.

The author discusses diagnosis and the various diagnostic tests. As yet there is no specific diagnostic test to confirm clinical suspicion.

Although a vast array of agents have been tried, specific therapy for this disease remains unsatisfactory. Maintenance of good nutrition, prevention of deformities, and maximal tolerated activity with children of similar age, if possible, is stressed. A table giving dosages of the most useful drugs for symptomatic relief is given.

Rheumatoid disease may remain active for 20 years or longer, and may undergo an exacerbation after a remission of 30 years. Therefore, the author points out, one should be hesitant to consider any child who has apparently recovered from active rheumatoid arthritis as cured. The principal message that the author wishes to convey is the importance and feasibility of early diagnosis.

Posthemiplegic Shoulder Pain

Jerome S. Tobis (New York Medical College, New York), N. YORK STATE J. M., 57: 1377-1380, Apr. 15, 1957

The purpose of this paper is to call attention to a common cause of persistent pain in the paralytic shoulder and arm of patients with hemiplegia. This pain, a frequent complaint, may be limited to the shoulder area or radiate down to the hand. The normal curve of the shoulder is modified, passive motion is painful, and digital pressure over the shoulder joint produces marked, localized tenderness. The hand is frequently edematous from immobilization and dependency. Besides these symptoms, the clinical picture usually reveals complete or almost complete flaccid paralysis of the shoulder musculature with atrophy. A separation of one or more centimeters is seen and palpated between the glenoid process and the head of the humerus. This subluxation is the most common cause of shoulder pain in hemiplegics. It is due to weakness of muscular support and results in distention of the joint capsule and overstretching of the muscular joint cuff. Therapy consists of adequate support of the shoulder joint by means of a sling and proper posturing at night. This counteracts the pull of gravity and results in rapid relief of pain.

The Painful Shoulder

A. F. DePalma (Jefferson Medical College, Philadelphia), POSTGRAD. M., 21: 368-376, April 1957

The functional anatomy of the shoulder joint is poorly understood and therefore many conditions involving the shoulder are misdiagnosed. In discussing a reason for their existence, a method of management and a means of intelligent diagnosis, the author includes the controversial problems of the role of the biceps tendon in precipitating the so-called "frozen shoulder" and the diagnosis and management of the torn rotator cuff.

A case history of frozen shoulder is presented. The most important feature in a frozen shoulder is the site of pain. The pain in this case is localized over the biceps tendon. Nature cures this type of disability by fixing the biceps tendon in the groove, first by fibrous adhesions and finally by a bony process. It is stated in the textbooks that if one waits long enough the patient with a frozen shoulder eventually will get better, however, this process may take 6 months to 18 months, and sometimes as long as 5 years. What then should be done for this patient? In the early stages of frozen shoulder there exists an acute inflammatory process in the biceps tendon which causes the pain, and measures should be taken to reduce the inflammation. Limiting the arc of motion achieves this best. The patient should never be forced to move the arm beyond the painless arc. He should be encouraged to move the arm but always within the painless arc. The arm should never be brought above the horizontal external position or into the posterior in-

ternal position. Simple measures of physical therapy are prescribed. The most important of these is wet heat. All of the diathermy, X-ray, and ultrasonic therapy given to these patients is of no avail. Wet heat gives the best results administered as repeated hot compresses for half an hour several times a day. The administration of hydrocortone is helpful. One cc. is injected into the glenohumeral joint and one cc. into the tendon sheath. About 85 to 90 per cent of these patients will respond to such treatment over a period of six to eight weeks. The author feels that manipulation of the painful shoulder is contraindicated and discusses an experiment in manipulating these shoulders under vision. Twenty-three shoulders were visualized. In every instance the capsule splintered and was torn. The subscapularus muscle was torn and there were large rents within the capsule. In two cases the shaft of the humerus was fractured and in three the biceps tendon was ruptured. Nine excellent photographic figures show degenerative changes in the joint and the head of the humerus.

Two types of tears of the rotator cuff are described, the incomplete or partial and the complete tear. The rotator cuff comprises the subscapularus, supraspinatus, infraspinatus and teres minor muscles. These muscles all blend with the capsule and insert into the humeral head. They are responsible for creating a fulcrum so that the deltoid can abduct the arm. If they do not function the arm cannot be raised from the side. We should forget the old concept that the supraspinatus will abduct the arm at the beginning of abduction. The only act that the supraspinatus performs is to work in unison with the rest of the muscles of the rotator cuff to create a fulcrum. When the fulcrum is created by anchoring the head of the humerus against the glenoid cavity, the arm can come up by action of the deltoid muscle. As a result of degenerative changes, many of these muscles begin to pull away from their insertion and by the fourth and fifth decades most shoulders will show various degrees of tears.

If the rotator cuff is partially torn from its insertion but the tear has not perforated the entire thickness of the cuff, the lesion is an incomplete or partial tear. If the perforation traverses the entire thickness of the cuff it is a complete tear. A complete tear of the cuff does not mean that the patient is unable to abduct the arm. It is important to remember that patients with complete tears are able to abduct the arm forcibly without trouble. A case report is then presented of a patient with a complete tear of the rotator cuff. In this particular case the tear of the rotator cuff is so complete that any attempt to abduct causes the deltoid to pull the arm up and shrug the shoulder. The patient has no fulcrum at all. Eight excellent photographic illustrations show the findings in tears of the rotator cuff. The author feels that rotator cuff injuries should be given a fair trial of conservative treatment and that most of these patients will recover if left alone. In summary, the diagnosis and management of frozen shoulder and torn rotator cuff is discussed briefly. Restoration of function will occur without surgical repair in about 90 per cent of the cases of torn rotator cuff. If the cuff is so severely torn that abduction power will not return, the physician should decide promptly to repair it. Emphasis is placed on the fact that there is such an entity as bicipital-tenosynovitis. It is usually diagnosed as bursitis and should be looked for.

Electromyography of Certain Hip Muscles

S. Joseph and P. L. Williams (Department of Anatomy, Guy's Hospital Medical School), J. ANAT., LOND., 91: 286-293, April 1957

Investigations into symmetrical easy standing have led to divergent views concerning the relation of thigh to pelvis at the hip joints and the precise role of hip musculature in the maintenance of such a position. In 1948 Akerblom reviewed the literature and pointed out that a number of investigators considered that during comfortable standing, the hip joints were fully extended, the iliofemoral ligaments were tense, and posture was maintained with a minimum of activity. In 1955 Steindler stated that the body is in a state of unstable equilibrium at the hip joints and the erect position is maintained by contraction of appropriate muscle groups.

An investigation of this problem using electromyography was undertaken. A double channel amplifier was used with double-beam oscilloscope. Eighteen males ranging in age from 18 to 42 years were used as subjects. The muscles investigated were 1) iliopsoas, 2) gluteus medius and minimus, and 3) gluteus maximus and hamstrings. Movements investigated were forward arm raising to 90 degrees, forward swaying at the ankle joints with knees straight, and slow bending at the hip to touch toes with knees straight. At the beginning of each movement, the subject was in a position of symmetrical standing at ease, and he returned to this position when the movement was completed.

When standing at ease, the results obtained from the gluteus maximus, gluteus medius, and gluteus minimus in all 18 subjects presented a similar picture as relaxed muscles. Relaxed muscles showed a minimal deflexion due to amplifier noise. In 5 subjects, persistent potentials were observed in the iliopsoas. When the subjects were asked to relax the abdominal muscles, however, the potentials disappeared, and a relaxed muscle picture was obtained.

During forward arm raising, large potentials were recorded from the hamstrings. The gluteus maximus showed no evidence of electrical activity. With forward swaying at the ankle joints, large potentials appeared almost immediately from the hamstring group. There was no activity from the gluteus maximus. During toe touching with the knees straight, large potentials were detected from the hamstrings immediately after the movement commenced; these persisted throughout the upward and downward phases of movement and disappeared only when the standing at ease position was regained. There was no demonstrable activity in the gluteus maximus until the final stage of the downward phase of the movement when large potentials were recorded. They persisted throughout the upward phase and disappeared a little before the standing at ease position was again reached.

Considerations Concerning Increasing Cerebral Blood Flow in Cerebral Insufficiency

J. E. Webster, E. S. Gurdjian and F. A. Martin (Grace Hospital and Detroit Memorial Hospital, Detroit, Michigan), J. NEUROSURG., 14: 152-159, March 1957

The possibility of increasing the blood flow to a cerebral hemisphere by means of repeated temporary carotid compression is considered and illustrated in this paper.

Some of the past experiences related to this procedure by earlier workers are noted and clinical-patho-

logical evidence is presented. The latter includes the common clinical observation of the ability of patients to recover from cerebral vascular occlusions because of an improvement in the cerebral circulation. Also, neuropathologists have recognized that the infarcted area in a brain is of lesser area than that supplied by the involved artery. The vessels within the infarcted area contain fluid blood indicating that collateral circulation has been present. The authors' experiences have shown that patients with carotid occlusions caused by atheromatous disease at the carotid bifurcation develop an increasing tolerance to contralateral digital carotid compression; i.e., the syncopal effect, the symptoms of dizziness, blurred vision, and faintness caused by compression show gradual diminution and finally fail to appear. Other observations are cited which indicate the establishment of a collateral circulation in the brain.

Angiographic studies have confirmed earlier pathologic studies which showed that a collateral blood supply may be demonstrated following the occlusion of major vessels. Laboratory evidence in monkeys indicates that the pial circulation has the ability to dilate and to provide anastomotic flow.

The authors believe that a reasonable conclusion based upon theoretical evidence and confirmed by their experience is that compression of the carotid may be of value in encouraging collateral flow in the treatment of a cerebral vascular insufficiency syndrome.

Surgery of the Periarthritides of the Shoulder

L. J. Michotte (University of Louvain, Brussels), BRIT. J. PHYS. M., 20: 77-85, April 1957

Periarthritis of the shoulder is not one clinical entity. The term covers several distinct conditions all possessing a common characteristic; namely, painful limitation of the movements of the shoulder. The purpose of this paper is the brief description of these different affections and to justify their surgical treatment.

There are three necessary conditions for harmonious functioning of the shoulder: 1) the essential muscular harmony between the elements of stabilization and those of mobilization should not be broken, and a disequilibrium should not result, which would bring about a premature contact of the head of the humerus with the osteoligamentary vault of the shoulder; 2) the tendinous elasticity should remain intact, allowing a normal mobility; and 3) no inflammatory process should lead to adhesions between the muscular planes, which would arrest every possibility of normal function.

There are three types of lesions which will interfere with function. These are: 1) muscular lesions, mainly of the supraspinatus muscle; 2) tendinoligamentary lesions of the long head of the biceps and of the coracohumeral ligament; and 3) lesions of the synovial membrane, the aponeurosis of the virtual subdeltoid space and lesions of the inferior recess of the articular capsule.

The musculotendinous cuff of the shoulder is formed by four muscles, subscapularis, supraspinatus, infraspinatus, and teres minor. It can be the site of two types of lesions. First, degenerative lesions with intratendinous deposition of calcium. Treatment will be either physical (application of ice), chemical (intra-articular injection of hydrocortisone), or surgical (removal of the calcification) with favorable results which are not accompanied by lasting ankylosis of the shoulder. The second type of lesion is a partial rupture of the muscular cuff of the shoulder. Decision as to the treatment will be based on two factors—the power of the deltoid muscle and the importance of the tear. A powerful deltoid and a musculotendinous tear of minor importance will require operation. A weak deltoid and a tear, even of considerable importance, can sometimes be reeducated.

Lesion of the long head of the biceps and of the coracohumeral ligament can be demonstrated clinically by the Yergason test and the faradic test. The treatment will be medical and physical, at least in the initial stages, and consist of injection of hydrocortisone into the bicipital groove, and slow, effortless mobilization. There is no place for mobilization under anesthesia. In case of failure, the freeing of the tendon and its reposition at the level of the coracoid process, gives excellent results.

The synovial membrane of the shoulder joint has on its anterior surface four bursae. These bursae can be demonstrated by contrast arthrography. Application of this technic shows that the "frozen shoulder" presents obliteration of one of the bursae, most frequently the subscapularis or the subacromial. Treatment is first medical and consists of subcoracoidal injection of hydrocortisone into the subscapularis bursae. When the spontaneous pain has calmed down, gentle progressive mobilization will allow the shoulder to recover.

Whiplash Injuries

A. A. Savastani and Donald F. Larkin, RHODE ISLAND M. J., 40: 220-222, April 1957

Whiplash injury refers to the type of injury which occurs when the cervical spine is forced into acute flexion which is followed by sudden uncontrolled hyperextension. It occurs frequently in automobile accidents when a car is struck from the rear.

Motions of the cervical spine include flexion and extension, which occur at the atlanto-occipital joint, and rotation, which occurs at the atlanto-axial joint. The remainder of the cervical spine has motions similar to those in the lumbar region. The major difference between the cervical and other vertebrae is the presence of a neural foramen in each transverse process.

Of the joints between the vertebrae, the lateral intervertebral joints play the most important role because of their closeness to the foramina through which the nerve roots pass. Any disturbance at these joints may result in a decrease of the diameter of the foramina with resulting pressure on nerve roots.

Whiplash injury may cause any degree or combination of soft tissue injury—including injury to ligaments or capsule of intervertebral joints, disk compression, subluxations, and hemorrhage. There is accompanying pain, muscle spasm, and limitation of motion. Pain following these injuries is usually due to one of the following: adhesions, fibrotic changes in muscle and tendon, narrowing of the neural foramina, or protrusion of the intervertebral disk.

Symptoms are exaggerated with downward pressure on the head and relief occurs with upward traction. Complete X-ray examination should be given.

Treatment is directed toward relief of pain and muscle spasm. Cold applications during the first 24 hours are followed later by heat. Cervical traction is necessary in more severe cases. Prognosis is usually good if treatment is started early. Legal aspects regarding compensation may complicate the patient's recovery.

Fractures and Dislocations of the Cervical Spine—An End Result Study

William A. Rogers (Massachusetts General Hospital, Boston, Mass.), J. BONE SURG., AM. VOL., 39-A: 341-376, April 1957

This is a summary report of the author's experience in the orthopedic treatment of 77 patients who had suffered 87 fractures of the cervical spine, dislocations of the cervical spine, or both. The series of patients was accumulated over the 10 year period between 1940 and 1950. The average follow-up was five years.

Cases are cited and means of treatment for each of the cervical lesions encountered by the author. Throughout the article, he makes observations and suggestions about management of cervical spine dislocations and fractures, emphasizing repeatedly the danger to the spinal cord which is ever present until stability of the column has been restored.

Emergency treatment may be necessary at the time of injury, and the author recommends a cervical neck brace which maintains the column in a neutral position until tongs can be applied. This neck brace exerts pressure on the occiput and chin in the cephalad direction and against the chest and shoulder girdle in a caudad direction. It should be used also whenever the patient is being moved from place to place such as to and from the X-ray department or to and from surgery.

For more adequate stability and closed reduction, tongs or Hoen wires are most often used. Halters are usually inadequate, especially for the adult patient, because of pressure areas. The extraneous movement allowed by the halters may be dangerous to the cord.

After the spinal cord has been protected as much as possible the next step is to restore the injured vertebrae to a normal or stable relationship with the vertebrae immediately above or below. This may be attempted conservatively at first by skeletal traction; however, in some cases where there is irreducible bone displacement, open reduction is indicated. In any surgery of the cervical spine, as was found through one unfortunate experience, laryngoscopic tracheal intubation must not be used because the procedure of inserting the tube may cause damage to the cord. Complete reduction is the ideal, but satisfactory reductions include those having less than 0.3 centimeter of decrease in the anteroposterior diameter of the vertebral canal.

Finally, it is important to assure lasting stability in the injured spine either by external fixation or internal fixation and fusion until healing is complete. The tongs or Hoen's wires are means of external stabilizers proving adequate in some cases, with a protective collar worn later, until recovery is absolutely assured. Internal fixation and fusion is provided by binding together with 22-gauge stainless-steel wire, the bases of the spinous processes of the injured vertebrae and those of the next above and below. Bone grafts are then applied to the exposed cortical surfaces denuded of periosteum, between the laminae and between the spinous processes. Stabilization by this means, assures the lasting safety of the cord.

The end result in each patient was determined by physical and roentgenographic examination. Many of the roentgenograms were pictured with the article and brief case histories explained the injuries, subsequent treatments, and end results.

Slipped Femoral Epiphysis with Severe Displacement—A Conservative Operative Treatment

Clarence H. Heyman, Charles H. Herndon and Joseph M. Strong (Services for Crippled Children, Elyria Memorial Hospital, Elyria, Ohio), J. BONE SURG., AM. VOL., 39-A: 293-303, April 1957

Surgical procedures for slipped femoral epiphysis with severe displacement have often proven inadequate and this more conservative operative treatment is proposed to those dissatisfied with the other procedures.

Because it is recommended after only 14 years' experience, the long term follow-up has not yet been attained. It is realized that osteoarthritis may eventually develop, but the authors consider this secondary to the symptom-free intermediate period of life.

Candidates for this operation have a severely displaced femoral epiphysis, which results in the neck of the femur riding upward and forward with the bony prominence pressing against the rim of the acetabulum, obstructing abduction and internal rotation. Extremity shortening may occur depending upon the amount of upward riding of the neck of the femur. Pain, limping, and limitation of motion are usually present.

The osteoplastic operation consists in removing this rounded or angular prominence of bone at the neck of the femur until unrestricted motion of the hip is accomplished. The epiphysial line is not interfered with, unless it is not yet fused. In this case, to prevent further displacement, an epiphysiodesis is performed, using bone removed from the limiting bony protruberance. Nothing is done to the rim of the acetabulum.

Following surgery, passive motion and active exercises are begun immediately with weight-bearing started as early as it can be tolerated.

This report is based on studies of 21 osteoplastic operations which were performed on 20 patients between the ages of 12 and 16. The average length of follow-up was six years and the results thus far show that the patient walks with the knee directed forward without pain. Although there may be some trace of a limp in some of the patients, the limitations of motion are not severe enough to be disabling or to interfere with normal activities. In all cases there has been no evidence of aseptic necrosis or roentgenographic evidence of osteoarthritis.

The authors feel justified in recommending this conservative operation for restoration of good motion and function, correction of deformity, and relief of pain in the condition of the slipped epiphysis with severe displacement. In their experience they have found this procedure preferable to the more radical cervical osteotomy or wedge resection.

Ultrasonic Energy and Surgically Produced Defects in Bone

Nicholas I. Ardan, Jr., Joseph M. Janes and J. F. Herrick (Mayo Clinic, Rochester, Minnesota), J. BONE SURG., AM. VOL., 39-A: 394-402, April 1957

Because there have been conflicting opinions about using ultrasound for improvement in the healing of fractures, the authors studied the problem further by using controlled surgical technics, method of ultrasonic exposure, and follow-up on four groups, each containing 16 dogs. These dogs were anesthetized and exposed to ultrasonic energy of 10, 15, 20, and 25 watts of total output on surgically created defects of the femur. Three remaining dogs were exposed to 5 watts of power.

Variables in this experiment were eliminated as much as possible but

difficulty was encountered immediately in the specific application of ultrasound. Even with the aid of thermocouples for accurate placing of the sound head, increases in temperature in the periosteal soft tissue varied considerably although the same amount of energy was applied by the same technics. This finding leads to skepticism of reports claiming accurate placement of the field of sound at a specific ganglion located deeply beneath the surface of the skin.

Following ultrasound, fractures of the femora occurred sufficiently to be significant in this study. A total of 22 of the 67 exposed femora were fractured while only 3 of the control femora were fractured. Due to this potentially destructive force, the authors caution against forceful manipulations unless there is complete knowledge of previous exposure, dosage, pain, and frequency of exposure.

Pictures of microscopic studies and roentgenograms provide comparative evidence of the healing process between the control femora and the exposed femora. A definite delay in healing of the bone defects was found in 54 of the 64 dogs exposed to 10 or more watts of ultrasonic power, but those exposed to 5 watts showed little retardation. Evidence of accelerated repair was not found in any case.

The most frequent finding in the ultrasonically exposed femora was cortical necrosis. Why medullary fibrosis was usually associated with necrosis could not be explained adequately, but it was felt that it might be represented as an abortive effort at osseous repair.

Another impression gained from the microscopic studies was that the exposed bone exhibited a greater amount of new bone formation. Unlike the new bone of the control femora which grew adjacent to the defect, the new bone of the exposed femora was at varying distances from the defect. Purposeless hyperplasia, the authors feel, suggests a possible tendency toward the realm of malignancy that deserves investigation.

In conclusion, the authors acknowledge the fact that these experiments were done on anesthetized animals, thus ruling out the safety factor of periosteal pain, and that dosages were undoubtedly greater than those applied to human beings. However, since effects of the more intensive amounts of energy have been studied, it appears the next step would be a controlled study with unanesthetized animals using more frequent but less concentrated exposures.

Importance of Flexion in Cervical Traction for Radiculitis

B. L. Crue (U. S. Naval Hospital, Chelsea, Massachusetts), U. S. ARMED FORCES M. J., 8: 374-380, March 1957

Traction is usually considered a very important adjunct in the conservative management of herniations of the nucleus pulposus, both lumbar and cervical, by the orthopedist and the neurosurgeon. Bilateral leg traction for those with lumbar disks has gradually been replaced with early laminectomy, but cervical traction is growing in popularity.

For most of the conditions for which cervical traction is used (the tension syndromes, organic cervical sprains, and whiplash injuries) almost any type of traction will give some measure of relief. In fractures or dislocations of the cervical spine, head halters are usually so constructed as to apply most of the force to the chin strap. Traction is applied in a straight line with the long axis of the body while the patient is in a sitting position. Such a pull invariably leads to extension of the neck. While such a method of cervical traction might be acceptable in the conditions mentioned, it results in little or no improvement, and may even intensify the pain of the patient with true radiculitis, resulting from narrowing of the intervertebral foramens.

In early or minimal herniations of the cervical disk or in the group of older patients with "spurs" at the foramens, associated usually with osteoarthritic changes, or for the patient whose condition contraindicates surgery, cervical traction in flexion is an important factor in conservative management.

The author reports the effectiveness of such treatment in 20 patients with cervical disk syndromes. With only one exception, all of these patients received moderate to complete relief when cervical traction was applied with the neck flexed 20°-30°.

Roentgenograms of the cervical spine, taken with the neck in a position of 10° extension and again with the neck flexed to 20°, substantiate the fact that the latter position results in an increase in the long diameters of the foramens, thus causing an over-all enlargement.

To obtain neck flexion while in cervical traction, the author suggests that the patient be placed in a supine position with the head supported on a pillow or folded sheet. A pulley is attached at the head of the bed so that the cord forms an angle of at least 45° at the pulley. Force is transmitted by a head halter with equal straps. In this manner, most of the pull is at the occiput and very little is felt on the chin. Traction is applied continuously with 5 to 7 pounds of weight. Patients may remove the apparatus to eat and go to the bathroom.

Vasomotor Responses in the Extremities of Subjects with Various Neurologic Lesions

Walter Redisch, Francisco T. Tangco, Lothar Wertheimer, Arthur J. Lewis and J. Murray Steele (New York College of Medicine, New York, N. Y.), CIRCULATION, N. Y., 25: 518-523, April 1957

This paper describes some of the abnormal vascular responses encountered in patients following cerebral vascular accidents and transection of the spinal cord.

A review of some of the findings in previous studies of altered vasomotor responses is presented, and because of conflicting evidence, it was considered worthwhile to restudy the respective roles of cerebrospinal and sympathetic innervation in regulating blood flow to the human extremity. This report deals with the reflex response to warming the body.

All experiments were done at a constant temperature of 20 degrees C. and 55 per cent humidity with an air current of less than 4.5 feet per minute. Such environment provides a mild vasoconstrictor stimulus for testing the vasodilator response to the Gibbon-Landis procedure. Blood flow was measured plethysmographically, and surface temperature was recorded. Twelve hemiplegic patients, 4 patients with "high transection" of the cord, and 8 patients with 11 sympathectomized limbs have been studied. Comparisons were made with studies in 10 normal persons, 9 elderly subjects without demonstrable vascular disease, and 8 patients with obliterative arteriosclerosis. Hemiplegic limbs were also directly compared with their nonparalyzed fellows in 5 patients, and the sympathectomized with the nonsympathectomized side in 4 patients.

The response in hemiplegic patients was vasodilator in nature just as in the 3 control groups. Changes in blood flow through a part of the body or an organ of the body are generally considered to be expres-

sions of vasomotor impulses. The results then seem to indicate that cerebral lesions causing hemiplegia do not essentially alter the reflex vasodilator response (increase in blood flow) to warming, in either the hemiplegic or the unaffected extremity. One patient with transection of the cord above T5 behaved like subjects after surgical sympathectomy. Basal blood flow was higher in sympathectomized limbs than in comparable controls. Of 11 sympathectomized limbs tested for vasodilatation in response to the Gibbon-Landis procedure, 4 showed no response, while 7 responded with decrease in blood flow (vasoconstriction).

Bilateral Rupture of the Quadriceps Tendon

Joseph F. Hinkemp and Raymond J. Pellicore (Cook County Hospital, Chicago, Illinois), A.M.A. ARCH. SURG., 74: 562-564, April 1957

A case of bilateral rupture of the quadriceps tendon successfully treated is reported. A 67 year old male fell down a flight of stairs. When helped to his feet he was unable to support his weight. After immediate surgery and a six week period of immobilization, heat and massage were administered daily for one week. Active knee flexion and extension were encouraged during this week. By the end of the second week, walking was relearned in the parallel bars. Cane walking followed eight weeks after surgery.

Bilateral rupture of the quadriceps tendon is rare. American and English literature reveal only 10 cases. Anatomic arrangement of the quadriceps extension mechanism indicates why rupture is not common. Supra- and infrapatellar ligaments attach the quadriceps muscle and patella to the tibial tuberosity. Tendon expansions of the medial and lateral vasti muscles fuse with thigh fascia and add strength to the knee capsule. Fibrous bands from the patellar margins to the tibial plateau and condyles help to stabilize the knee.

Etiology is obscure. Normal muscle and tendon tend not to rupture even under severe strain. Deprivation of tendon blood supply, aging with accompanying loss of elasticity, metabolic and degenerative diseases are predisposing factors. Violent contraction of the quadriceps with knee and foot flexed is the immediate cause of the tear.

Trauma, ensuing pain and joint effusion, loss of active knee extension, patellar hypermobility, palpable depression at the site of the tendon separation, and intact patella as revealed by roentgenograms make diagnosis easier.

Prognosis is favorable with surgical treatment. Surgery has been the treatment of choice since the first successful repair was reported in 1887. Exact type of repair depends on the ingenuity of the surgeon and the pathology found at operation. In essence, tendon anastomosis is effected without tension. Simple sutures tend to tear away due to the longitudinal arrangement of the tendon fibers. Therefore, Bunnell-type, pullout wires inserted through the quadriceps tendon and brought out through the skin eliminate any pull on the suture line.

Six weeks of immobilization proved adequate. A week of heat, massage, active quadriceps exercises, plus a second week of ambulation in parallel bars, helped rehabilitate the knees. Photographs taken 10 weeks after surgery show active knee flexion, extension, and weight bearing.

Patellectomy and Fascial Grafting in Certain Cases of Long Standing Disruption of the Quadriceps Mechanism

James R. Horst and William H. Harris (Medical Corps, USAF) J. BONE SURG., Am. Vol. 39-A: 43-407, April 1957

This discussion begins with the case report of a 45 year old Army sergeant who had fractured his patella two years prior to this present admission. At that time, he had a cylinder cast applied and upon its removal six weeks later, there was only 90 degrees of passive motion and no active motion. He walked with a swing-through gait, locking his knee in hyperextension. Pain caused by osteophytic irregularities of the patella, irritating the synovial membrane, prompted him to seek further medical advice. At this time, a Kirschner wire was placed through the patella and the quadriceps muscle was stretched ¾ inch in one week. When undergoing surgery, it was found that a fibrous sheet had grown subcutaneously over the joint area and this was bridging the defect in the extensor mechanism. Strips of fascia lata were sutured into slits of the distal quadriceps tendon and anchored with a flap of the fibrous sheet to the periosteum of the tibia. When the cast was removed six weeks later, there was 60 to 170 degrees extension and 5 pounds could be lifted by the weight boot. Some active extension range was lost during the first three weeks, but this was corrected with recasting. Three months following surgery, the patient was walking a mile without tiredness or a limp and was able to lift 20 pounds, adding 10 more pounds and stair climbing by the end of 20 months.

In discussing this type of fracture, it is pointed out that many other repairs are attempted such as release of restricting bands, fascial grafts, and attaching the quadriceps directly to the tibia. Total patellectomy seems indicated in nonunion fractures with autogenous fascia lata grafts, however, to bridge the defect. This procedure makes it possible in some cases to restore quadriceps muscle function after a long period.

Ambulatory Treatment of Varicose Leg Ulcers with Fresh Placental Dressing

Fred R. Kenkewalter (Department of Surgery and the Medical Center of The Ohio State University College of Medicine), A.M.A. ARCH. SURG., 74: 316-321, March 1957

Permanent eradication of various leg ulcers is the ultimate therapeutic goal. Unfortunately the final answer does not exist. As reported in recent literature, various local and systemic therapies (including bedrest) currently used in the healing of ulcers, generally required months and the percentage of successful results were frequently low.

In the management of war wounds, fresh human placenta was found to render contaminated wounds sterile, to arrest necrotic processes, to fill open wounds of soft parts and bones by integration of placenta with underlying tissue, and to promote granulation of epithelization.

Nineteen patients with 30 leg ulcers were treated from three to seven weeks with placental dressings. Ulcers treated were associated with concurrent complications such as thrombophlebitis, arteriosclerosis, and lymphedema. Generally, only one application of the placental dressing was required. The method for preparing the placenta and for applying the dressing is briefly described and diagrammed. Patients were instructed in the simple routine of

changing the dry gauze and elastic bandage daily. No further instructions were given. All patients remained ambulatory without restrictions in their daily routine.

Patients were treated in the outpatient clinic by conventional measures prior to placental dressing therapy. Symptoms of pain and edema disappeared and ulcers healed from weeks to months sooner after placental therapy in contrast to treatment by conventional therapies. A typical case history is sketched.

The author postulates that the fibrous stroma, multitude of embryonic cells, hormones, enzymes, and vitamins contained in human placenta, have "a favorable influence on cell growth and proliferation ... stimulate copious clean granulation in the ulcer crater ... Ambulation, in addition, enhances the circulation and decreases stasis through the well known mechanism of the peripheral pump."

A list of 14 references concludes the article.

Our Abstractors for August

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Book Reviews . . . . .

A Pictorial History of Medicine. *By Otto L. Bettmann, Ph.D., Founder and Director of Bettmann Archive, New York City. Foreword by Philip S. Hench, M.D., Mayo Clinic, Rochester, Minn. Cloth; price $9.50. Pp. 318; illus. Charles C Thomas, Springfield, Ill., 1956.*

This book unfolds the history of medicine from 3000 B.C., to the end of the nineteenth century in a compelling narrative style which holds the interest to the very last page. It shows the impact of social and cultural attitudes on medicine, and of medicine. It traces medicine's progression and its regression, it exposes the age old "resistance" to change and advance, cites the martyrs who died for their profession, brings to life the humility of the truly great in medicine, and also the aggression of some who were equally great. The foreword by Dr. Hench is excellent. He states, "To be useful, however, medical truth must be put to work; it must serve. In the last analysis, that can happen only when the informed, dedicated physician and a single patient who needs him actually meet. It is in this place, a sick room, where the truthful dreaming of the theorist, the demonstrations of the experimentalist, the magic of the chemist, the guidance of the laboratory, and the wisdom of the practitioner finally come together for the critical testing." Dr. Bettmann carries his readers, spellbound, through each of these developments.

The first six chapters show medical development from ancient Egypt to the Renaissance. It is interesting to learn that the mystic symbol ℞, which heads all present day prescriptions originated 5,000 years ago. It is a modification of the eye of Horus, a healing Egyptian god which was used as an amulet against disease. Later it assumed the form of a flourished numeral 4 which was used to invoke the assistance of Jupiter to make the medication successful. Now it is a combination of the two. During this period Ancient Egyptians, Babylonians, Assyrians, Hebrews, Greeks, and Romans made contributions to medicine. Many ancient concepts and customs have endured. Also, many erroneous theories hampered the progress of medicine. Magic, faith healing, superstition, rigid adherence to tradition, pomposity, and hyper-intellectualism brought on the regression of medicine many times.

The Egyptians used molds and yeast to dress wounds (penicillin?), the Babylonians contended that disease was caused by external agents (germ theory?) which were carried by insects, nonpriest surgeons banded together (first medical society?), fees were charged according to ability to pay (sliding pay scale?), lay physicians were licensed to practice (state boards?) and if a patient lost his eye his physician must lose his hand (forerunner of the malpractice suit). Hippocrates gave the profession a code of ethics. He advocated early mobilization and exercise to prevent wasting (deconditioning syndrome?). The Roman Army provided convalescent centers equipped with baths and recreation facilities (rehabilitation centers?). Unfortunately, Aristotle's theory of "spontaneous" generation of disease existed until 1880 when Pasteur disproved it, and Empedocles' "humoral" theory of illness endured from 600 B.C. until 1858 when Virchow challenged it. The Arabians developed a modern apothecary's code (no physician could own a pharmacy!).

The first secular institution of higher learning in the West was the School of Medicine at Salerno (900 A.D.) which contributed significantly to medical progress, but unfortunately revived the humoral theory and blood letting by phlebotomy to get rid of excess humors. General anesthesia and surgical asepsis were used in the thirteenth century. Lepers were isolated. The catastrophic plague (Black Death) decimated European population and closed the curtain on the Middle Ages.

Chapter seven begins with the Renaissance, and continues through the sixteenth century. This period produced DaVinci, Vesalius, Paracelsus, Pare, and others. It also brought syphilis (patients were treated in heated ovens). Obstetrics continued to be neglected (women were the cause of original sin, so let them suffer!). "Quacks" and cure-alls also flourished. The stars were consulted for diagnosis. Reading glasses opened new vistas, especially for the aged, and England set up the Royal College of Physicians.

The last four chapters cover the seventeenth, eighteenth, and nineteenth centuries. The quantitative method was ushered in with new devices for measurement during the seventeenth century. Sanctorius designed the "pulse chair" (ballistocardiograph?). The medical giant of this century was William Harvey who opened the gates to modern physiology, cardiology, and hematology with his revolutionary book on the circulation. Von Leeuwenhoek saw "minute animals" under a home made microscope, and Kircher concluded these organisms carried disease. The first blood transfusion was done in 1667 (they used sheep's blood). The plague of 1665 again devastated Europe; physicians could not control it. There followed a swarm of fake healers, faith healers, unethical drug practices, and loss of face for the medical profession.

The eighteenth century, called "The Age of Reason" was, in fact, one of "Confusion" for the doctors who found that a prolific period of experimental research had resulted

in almost no practical clinical benefits. Social reforms, however, were speeded up for prisons, tradesmen, soldiers, and sailors. A plan was proposed in England for the State to be responsible for the people's health from the "womb to the tomb" (socialized medicine?). The giants of this century were Stephen Hale who gauged blood pressure, and John Hunter, the first experimental surgeon. Two great contributions were made when Pinel unshackled the insane and Jenner introduced vaccine to prevent smallpox. (The Royal Society rejected his manuscript.) Quackery, this time, was in the form of healing electricity, the miracle cure for everything. Benjamin Franklin unwittingly aided and abetted this.

The nineteenth century saw confusion dispelled to an appreciable degree. It is studded with the names of the great in medical science. Dr. Beaumont studied digestion by observations through a hole in St. Martin's stomach. Drs. Long and Morton introduced ether anesthesia and precipitated a medical feud. Dr. Semmelweis (1847) advocated the use of the simple and lowly hand brush for scrubbing up before deliveries, and reduced maternal death rate from 12.4 per cent to 1.27 per cent in two months (some 30 years later "scrubbing up" became routine in preparation for surgery!). Bernard and Virchow dedicated their efforts toward bringing the truth to the fore, and discrediting traditional fallacies. Charcot and his pupil Freud developed modern psychiatry; Duchenne studied muscles and nerves with electrical stimulation; Koch isolated the bacillus of tuberculosis; Drs. Finlay, Lasear, and Reed identified the insect vector of yellow fever and brought this scourge under control; and phlebotomy was killed by statistics. Professional nursing training finally received medical approval. Johns Hopkins Medical School and Research Hospital were opened, providing the best in medical education.

The nineteenth century went out in a blaze of glory for the medical profession, with the course of medicine changed. Radium was discovered by the Drs. Curie (the indivisible atom was now divisible), Pasteur proved the germ theory of disease, and Erhlich opened the gates for the development of chemotherapy which has literally flooded the twentieth century.

This is indeed an excellent book which should be in every library; it should be read by everyone connected with the healing arts. It is concise and comprehensive. The well chosen illustrations give as much information as the narrative. Your reviewer was able to answer (at home) the $16,000.00 question on Medical History after reading it.

Training of the Lower Extremity Amputee. *By Donald Kerr, B.B.A., Director, National Institute for Amputee Rehabilitation, Lodi, New Jersey; and Signe Brunnstrom, M.A., Consultant in Amputee Training, Institute of Physical Medicine and Rehabilitation, N.Y.U. — Bellevue Medical Center, New York City. Introduction by T. Campbell Thompson, M.D. Cloth; price $6.50. Pp. 272; illus. Charles C Thomas, Springfield, Ill., 1956.*

Training of the Lower Extremity Amputee is a collaboration of two authors, each of whom contributes significantly in the consideration of the problem. Although there is necessarily some repetition of basic principles, much previously unpublished information is presented. The broad scope of material covers in detail all problems of the lower extremity amputee, from primary psychological adjustment; care of the stump, preprosthetic training, selection and purchase of the prosthesis, to its use with maximum skill and efficiency.

Of particular interest to the amputee himself, and to those to whom such questions are most frequently directed, is the frank discussion of the relationship and need for cooperation between the amputee and his limb maker; what he may expect in the way of adjustment, replacement and cost. This economic aspect is frequently overlooked or dealt with superficially. There is also a matter-of-fact discussion of the socio-economic factor of employment dependability and performance.

No new concepts are offered in preprosthetic care or in the exercise program, but emphasis is well placed on positioning, prevention of contractures, proper use of crutches, weight control, and bandaging.

Each type of lower extremity prosthesis is discussed in detail, its mechanism and component parts are described and illustrated. Although major adjustments are made only by the limb maker, minor adjustments and emergency repairs, tightening, greasing, etc., are described to enable the amputee to perform relatively minor servicing himself. The book is generously illustrated with well chosen photographs and line drawings.

Practical hints concerning dressing and other activities of daily living, instructions in balancing and walking, and common faults and errors enable an amputee to learn to use his prosthesis efficiently without further help.

Considerable emphasis has been placed on athletic activities and participation in competitive sports, but the use of a prosthesis by a geriatric patient has not been discussed.

This manual answers most of the questions an amputee may have and leaves the big question of how well he may ultimately be able to use his prosthesis squarely up to him.

Natural Childbirth. *By H. B. Atlee, M.D., F.R.C.S. (Ed. and Can.), F.I.C.S. Head of Department of Obstetrics and Gynecology, Dalhousie University, Halifax, Nova Scotia, Canada. Edited by E. C. Hamblen, M.D., F.A.C.S. Professor of Endocrinology, Duke University School of Medicine, Durham, N.C. Leatherette; price $2.75. Pp. 79; illus. Charles C Thomas, Springfield, Ill., 1956.*

The author of this monograph opens his remarks with a description of the unfortunate position of the pregnant woman in our present society. He contends that she is made to feel that pregnancy is an undesirable state which should be concealed, and when this is no longer possible, public display of her condition should be avoided. Great effort has gone into training men for action in battle but very little has been done to condition women for delivery. To establish recognition for the need and desirability to do so, it would be necessary for society to concede that creating life is as important as destroying it.

Through experience the doctor has found that women who choose to use natural childbirth will not carry out a lengthy exercise program. The training he has used most effectively is divided into three parts: (1) breathing exercises that vary for the particular stage of labor; (2) instructions in the physiology of pregnancy and labor, and an orientation to the labor section of the hospital; (3) propaganda aimed at increasing the woman's pride in having a baby.

At the first visit, the woman is given a mimeographed letter which explains in simple language what goes on during her pregnancy and labor. She is encouraged to bring her fears to the physician and the nurses. During all of her pregnancy, she is made to feel the importance of what she is doing. She is told that the doctors, nurses, and other medical workers involved are essential to the pregnancy and labor only to make it as safe as possible.

This small volume is a well written, readable expression of an obstetrician's personal philosophy about how to manage the pregnant woman so that she feels a sense of satisfaction and great accomplishment after delivery. He comments on the architectural planning of the hospital area used for labor and delivery, on the results he has achieved with natural childbirth, the effect of natural childbirth on the woman, and the role of the doctor and ancillary medical personnel during pregnancy and delivery.

Recommended reading for physicians, therapists, and nurses. Although some may take exception to Dr. Atlee's comments, they are thought provoking.

Care of the Long-Term Patient. Vol. II, Chronic Illness in the United States. *A report of the Commission on Chronic Illness. Cloth; price $8.50. Pp. 606; illus. Harvard University Press for the Commonwealth Fund, Cambridge, Mass., 1956.*

This is the first publication of a four-volume series on Chronic Illness in the United States and is the report of the Commission on Chronic Illness with regard to care of the long-term patient. These patients are defined as "persons suffering from chronic disease or impairments, who require a prolonged period of care; that is, who are likely to need, or who have received care, for a continuous period of at least 30 days in a general hospital, or care for a continuous period of more than 3 months in another institution, or at home, such care to include medical supervision, and/or assistance, in achieving a higher level of self care and independence."

It was estimated that in 1950 there were 5.3 million persons disabled for over three months.

Extensive studies were made of the patients at home, including those in their own or relatives' homes, foster homes or boarding houses, and in institutions or nursing homes. The problems of the patient at home and of the patient in an institution are fully discussed, with suggestions for correction or improvement. Emphasis is placed on rehabilitation of the long-term patient witih suggestions as to how this can be done most easily and efficiently. It is recognized that many may not become employable, but achieving a higher level of self care is worth while.

The problem of a shortage of professional personnel is discussed. Helpful suggestions are made for better utilization of the present personal and for coordination of agencies now functioning. Proper integration of the latter would mean more efficient function, and a decrease in cost. The financial problems facing the community and the long-term patient and his family are recognized and possible solutions discussed. Here the importance of the coordinated efforts of overlapping agencies is clearly indicated.

This report on a vital family, and/or community problem represents hard and intensive work on the part of many people and agencies. The problems of the long-term patient are thoroughly evaluated and followed by definite and concise conclusions and recommendations. Persons and agencies dealing with this type of patient will find this report of value especially as a reference volume. Those who desire statistics and definite information will appreciate the tables given in the elaborate appendices.

The reviews here published have been prepared by competent authorities and do not represent the opinions of the American Physical Therapy Association.

You know those rare days when *everything's* right? Air smells good. Food tastes terrific. Even the old face looks good in the mirror. *Today* can be that kind of day. Just do two things. Call your doctor for a thorough medical checkup for cancer. Then write out a check—a nice fat one—to the American Cancer Society, and mail it to "Cancer" in care of your local Post Office.

AMERICAN CANCER SOCIETY

Our Book Reviewers for August

Ruby Decker, Educational Director, Physical Therapy, University of Texas Medical Branch, Galveston, Texas.

Virginia L. Frost, Capt. AMSC, Physical Therapy Section, Madigan Army Hospital, Tacoma, Washington.

Geneva R. Johnson, Coordinator, Department of Physical Medicine, Medical College of Georgia, Eugene Talmadge Memorial Hospital, Augusta, Georgia.

Rachel Weems, M.D., Director of Physical Medicine, Woodrow Wilson Rehabilitation Center, Fishersville, Virginia.

What's New . . . . . .

For more information on items write to The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

New items which may be of interest to physical therapists will be mentioned in these pages each month. The accompanying explanations are made by the manufacturers and have not been investigated by the *Physical Therapy Review.*

80. Hand Control

Hand Control fits all cars with automatic transmissions and may be used for either right or left hand installations, according to the manufacturer. It is possible to feed gas by rotating the vinyl hand grip (1) and to apply brakes by pressing the hand grip floorward. (2) The leverage bar rests under the heal of the hand offering additional leverage in rotating the gas feed. (3) Brake and accelerator "hook-ups" are completely ball-jointed. (4) The thumb-positioned dimmer switch does not affect the use of the car's foot switch. (5) Stainless steel clamps fit or are adaptable to all steering columns. (6) Extension arm is furnished with each set to guarantee perfect positioning for left hand installations and deep-set steering hubs. Wells-Engberg Co.

81. Anatomy of the Hand

Surgical Anatomy of the Hand by Ernest W. Lampe, M.D., is a 46 page publication with 55 illustrations, the majority being in color. Neuromuscular function is described. Available on request from Ciba Pharmaceutical Products Inc.

82. Automatic Mat Hangers

Krimmel Automatic Mat Hangers prevent mat destruction, eliminate dangerous hooks, promote order and cleanliness, and permit economical use of floor space. Two single type hangers will hold a standard 2 inch mat up to 7 feet long. Three hangers are recommended for mats ranging from 7 to 10 feet in length. Hangers and brackets come equipped with hardware ready to install. EK Mat Hanger Company.

La Berne

"Multi" Exerciser

The LaBerne "Multi" Exerciser offers Flexor Elbow Exercises, Adduction, Abduction and Extensor Shoulder Exercises, Shoulder Suppression, Shoulder Rotation, Abductor and Bilateral Hip Exercises, Knee and Hip Flexor Exercises, Abdominal and Intercostal Exercises, Hamstring Stretching and Stump Exercises.

This unit is easily moved from room to room and requires only 24" floor space. It has telescopic Height Adjustment, Hinged Joint Upright for use with Flutter Motion, Swivel Joints on Boot and Arm Attachment.

The "Multi" Exerciser is calibrated in pounds—offering resistive exercises that may be increased as the patient progresses. This unit can be used with specific pounds resistive in either direction, or set pounds resistance in both directions, or with assistance one direction, and resistive other direction.

Shown is model no. 9910 (it includes attachments shown)

LaBerne Exercise Mat

The LaBerne Exercise mats were designed after much study and research with a number of Physical Medicine Departments. These mats are made by a special process, using polyurethane foam. Cover is tearproof, waterproof nylon. Weight of mats—8 oz. per square foot. Made in 54" width, any length. Stock size is 54" x 78". Model no. 9100

PAT. PENDING

WRITE FOR LITERATURE

WALK-OFF

La Berne Manufacturing Company, P. O. Box 5245,
Columbia, S. C. Phone SUnset 7-6162

ORIGINATORS OF THE "WALK-OFF" PHYSICAL THERAPY TABLE

Classified WANT-ADS

PHYSICAL THERAPIST: To work in cerebral palsy treatment center. Fully equipped, comprehensive program. Excellent medical supervision, good salary, liberal personnel policies. Scholarship available for preliminary training if desired. Write Dr. H. L. Rudolph, 400 North Fifth Street, Reading, Pennsylvania.

PHYSICAL THERAPISTS, MALE OR FEMALE: Two qualified therapists for 208-bed accredited general hospital; well equipped and established therapy department. Excellent working conditions. Beginning salary is $350.00. Experienced therapists paid accordingly. Write Personnel Director, St. Luke's Hospital, St. Paul 2, Minnesota.

PHYSICAL THERAPIST—Opening available in Department of Physical Medicine and Rehabilitation affiliated with Medical Schools. Starting salary $3,750. per annum. Liberal employee benefits. Must meet New York State requirements. Contact—Dr. B. B. GRYNBAUM, Dept. of P.M. & R., Bellevue Hospital, New York 16, N. Y.

PHYSICAL THERAPISTS. Varied case load in 600-bed general hospital. Beautiful Orange County, 35 miles south of Los Angeles. Starting salary $355. First increase in 6 months. Three-week vacation. Graduation from accredited PT school and eligibility for California registration. Apply Orange County Personnel Department, 644 North Broadway, Santa Ana, California.

PHYSICAL THERAPIST: General physical therapy for 398-bed, JCAH fully accredited, acute, general hospital. Expansion program including new rehabilitation unit underway. Liberal personnel policies. Apply to Velma E. Flaningam, Chief Therapist, Mount Sinai Hospital of Cleveland, 1800 E. 105th St., Cleveland, Ohio.

PHYSICAL THERAPIST, REGISTERED for 192 bed general hospital carrying fair load of in- and outpatient work as well as outpatient cerebral palsy children. Hospital located in 35,000 population upstate city, 75 miles north of Syracuse. The Thousand Islands, Lake Ontario and the Adirondack Mountains are within a radius of a few miles. A real nice place to live and work. Contact Carlton B. Shannon, House of the Good Samaritan, Watertown, New York.

REGISTERED STAFF physical therapist for 600-bed private teaching hospital with 30-bed Rehabilitation Center. Both inpatients and outpatients. Beginning salary $325 per month with regular increments and vacation pay. Write Harold N. Neu, M.D., Director, Rehabilitation Center, Creighton Memorial St. Joseph's Hospital, Omaha, Nebraska.

WANTED: ASSISTANT THERAPIST. Good opportunity for recent graduate, either male or female. Fully equipped department. Two weeks' vacation, holidays, sick leave. Good starting salary with regular increments. Write Raymond T. McHugh, Administrator, Memorial Hospital at Exeter, Exeter, California.

Physical Therapist for active, well equipped department in teaching hospital affiliated with Northwestern University. Pleasant living in residential, lake-shore suburb just north of Chicago. Forty-hour week, three-week vacation, good salary. Apply: Personnel Director, Evanston Hospital, 2650 Ridge Avenue, Evanston, Illinois.

MALE or FEMALE physical therapist for United Cerebral Palsy of Hamilton, Ohio. Good wages. Contact Dr. Wm. A. Smith, Rentschler Building, Hamilton, Ohio. Telephone TWinbrook 2-8314.

Physical Therapist, STAFF POSITION, male or female. Salary commensurate with experience. Five-day week, liberal vacation, holiday and sick leave. Social Security. Apply Personnel Director, Crotched Mountain Rehabilitation Center for Children, Greenfield, N. H.

QUALIFIED PHYSICAL THERAPIST for modern and well equipped department. Within two years present Physical Therapy shall expand to a multiple disability rehabilitation facility. The cooperative efforts of the entire group of local and state Health agencies are participating in this dynamic expansion program as defined by the U.S. Government Public Health Service. Excellent opportunity to those who seek a challenge. Liberal personnel policies and salaries are in line with current levels. Write Personnel Director, Blessing Hospital, Quincy, Ill.

REGISTERED PHYSICAL THERAPIST: Immediate opening in large orthopedic office. Male or female. Department fully equipped and under excellent medical supervision. Five-day week and liberal personnel policies. Send qualifications and work experience to Drs. Mollin and Hoyt, Jr., 666 W. Market St., Akron 3, Ohio.

CALIFORNIA positions open for GRADUATES OF APPROVED PHYSICAL THERAPY SCHOOLS in State hospitals, Veterans Home, and special schools for cerebral palsied children. Require U.S. Citizenship and registration with California Medical Board. Excellent employee benefits; salary ranges $4,740 to $6,360. Write State Personnel Board, 801 Capitol Avenue, Sacramento, Calif.

CUPID has struck again. Staff position, physical therapy department, outpatient orthopedic clinic (private practice). Good salary and working conditions. Female therapist preferred. Details upon inquiry. Marcia Kennedy, Chief Physical Therapist, The Miller Clinic, 123 W. 7th, Charlotte, N. C.

REGISTERED PHYSICAL THERAPIST for modern Physical Medicine and Rehabilitation Department in 240-bed general hospital. Complete outpatient and inpatient service. Student program. Salary commensurate with experience; merit raises. Five-day work week with liberal paid vacation, holiday, and sick leave benefits. Write P.M. Dept., St. Johns Hospital, 403 Maria Avenue, St. Paul 6, Minnesota.

Classified WANT-ADS

STAFF PHYSICAL THERAPIST, either experienced or inexperienced. Excellent working conditions, 37½-hour work week. Good personnel policies, good medical supervision. Beginning salary for experienced physical therapist $4,000. Crossroads Rehabilitation Center has recently moved into a new modern completely equipped plant rated as the finest in the nation. If you are cooperative, pleasant to work with and interested in the future please apply, Roy E. Patton, Executive Director, 3242 Sutherland Ave., Indianapolis, Ind.

WORK IN SOUTHERN CALIFORNIA: Physical therapists needed to staff new Rehabilitation Service at Rancho Los Amigos Hospital. All aspects of rehabilitation of all age levels including post-acute and convalescent care of respirator patients, general medical, and orthopedic disabilities and all aspects of bracing and prosthetics. In-service training program under direction of physical therapy instructor. Five-day 40-hour week, holidays, sick leave, vacation privileges, retirement benefits with Civil Service rights. New building and most modern equipment available. Quarters available; laundry furnished. Good beginning salary, annual increases. Write: Personnel Director, Rancho Los Amigos Hospital, Hondo, California.

PHYSICAL THERAPIST: Wanted for active, well equipped department in 118-bed hospital with expansion program underway. Pleasant surroundings in north suburb of Chicago; modern housing. Recreational facilities and cultural activities available. Good salary, 40-hour week, varied cases treated. Apply to Personnel Director, Highland Park Hospital, 718 Glenview Avenue, Highland Park, Illinois.

Physical Therapist Needed
September Opening
Salary $4300.
Increments for Experience
M. Elna Hansen, Dir. of Ed.
Monroe Public Schools, Monroe, Michigan

IMMEDIATE opening for SUPERVISING PHYSICAL THERAPIST and STAFF PHYSICAL THERAPIST to operate department in new children's 30-bed multi-disability facility. Unit of a medical center which includes 500-bed hospital, medical and nursing schools and progressive research program. Increasing emphasis on rehabilitation training. Unit is completely equipped and air-conditioned, in attractive setting near University. Salary $4,128-$5,160 for supervisor; $3,456-$4,320 for staff. Apply Martha Norris, Coordinator, University of Virginia Children's Rehabilitation Center, Charlottesville, Va.

QUALIFIED PHYSICAL THERAPIST (female) for staff position in V.N.A. Generalized P.T. service to a growing community of 200,000. At least one year paid experience in a hospital or clinic under supervision of qualified physical therapist. Minimum $3,800 depending on qualifications and experience. Liberal personnel policies include 30-day vacation. Apply Director, Visiting Nurse Association, 200 Maple St., Springfield, Mass.

IOWA METHODIST HOSPITAL, DES MOINES, IOWA, needs registered physical therapist. Hospital has 400 beds, including 100-bed Raymond Blank Memorial Hospital for Children. Plans under way for construction of 120-bed chronic disease unit. Post-polio cases, in- and outpatient work. Competent professional staff and assistants, excellent working relationships. Apply A. D. Damiani, Personnel Director.

Positions available for 1 ASSISTANT CHIEF and 1 STAFF therapist; 300-bed hospital with outpatient service. Located in fine sports area, only 25 miles from Detroit. Modern equipment, substantial salary, good personnel policies. Contact Marie C. Hickey, Chief Physical Therapist, St. Joseph Mercy Hospital, Pontiac, Michigan.

IMMEDIATE OPENING for staff physical therapist in expanding treatment center. Work with both adults and children, including orthopedic school pupils. Social security, paid vacation, and sick leave. Contact: Christine Haukland, R.P.T., Junior Service League Orthopedic Center, 1219 Dunn Avenue, Daytona Beach, Florida.

PHYSICAL THERAPIST—N. Y. Registered in N. Y. S. Immediate opening. Salary dependent upon experience. Address replies to Box 49, care of the Physical Therapy Review, 1790 Broadway, New York 19, New York.

PHYSICAL THERAPIST wanted for 50-bed children's convalescent home. Excellent medical supervision, good working conditions. Contact Junior League Home, 2400 White Ave., Nashville, Tennessee.

(continued on next page)

Classified WANT-ADS

RATES

The rate per insertion is $1.00 per line. Typewrite your advertisement carefully and count 50 characters and spaces per line.

ALL WANT-ADS MUST BE PAID FOR IN ADVANCE. Make checks or money orders payable to the American Physical Therapy Association.

Closing date for copy and cancellations is two months preceding publication date.

Institutions or physical therapists who do not wish their identity known may arrange for Blind Ad Code No. All such want-ads must include the following which will be counted as 2 lines:

Address replies to ..... care of The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

IMPORTANT

It is understood and agreed that the publisher shall have the right to reject or change the wording of any advertisement which in the opinion of the Editorial Board shall not be in agreement with the ethical standing of this publication.

Classified WANT-ADS

PHYSICAL THERAPIST: Staff position. Opportunity for varied experience; 650-bed general hospital, near center of cultural and educational activities. Vacation, sick leave and social security benefits. Apply Personnel Director, Harper Hospital, Detroit 1, Michigan.

PHYSICAL THERAPIST: In Hospital-School for rehabilitation of children with orthopedic handicaps. Complete interesting program. Good salary, merit increases. Annual paid vacation, sick leave, excellent retirement plan. Write to Richard Eddy, Superintendent, Illinois Children's Hospital-School, 2551 N. Clark, Chicago 14, Illinois.

WANTED: Staff physical therapist, MALE or FEMALE. New department completely equipped. Salary open. Forty-hour week, vacation, sick leave. Wide variety of cases with both in- and outpatients treated. Apply: Personnel Office, St. John's Hospital, 1235 E. Cherokee, Springfield, Mo.

Experienced physical therapists with ability to develop physical therapy departments in small community hospitals located in coal mining area of Kentucky, West Virginia, and Virginia. New hospitals, modern equipment, high standards of medical care. Entrance salaries for experienced staff $5340 to $6420 a year, depending on qualifications. ALSO, a few openings for recent graduates of approved schools for positions under supervision of experienced physical therapist. Starting salary $4440. Personnel policies include annual increments, 4 weeks vacation, 5-day work week. For application forms and further information, write:

MINERS MEMORIAL HOSPITAL ASSOCIATION
Attention: Mr. Philip J. Olin,
Associate Administrator for Personnel
Box 61, Williamson, West Virginia

WANTED: CHIEF PHYSICAL THERAPIST; 225-bed hospital with rehabilitation unit—excellent working conditions and employee benefits; 40-hour week—salary $400 per month—hospital located in Chicago area. Address replies to Box 5145 care of *The Physical Therapy Review*, 1790 Broadway, New York 19, N. Y.

VENICE OF AMERICA—Physical and Occupational Therapists for Out-Patient Treatment Center. Beginning salary $3600 to $4000 depending upon experience. Month's vacation, sick leave, 8 paid holidays, 5-day week, pleasant working conditions, near ocean, semi-tropical climate. Write Mrs. Mildred Sierra, Director, Bldg. 8, Naval Air Station, Ft. Lauderdale, Florida.

PHYSICAL THERAPISTS (3) needed to complete a staff of 12 therapists; 1,000-bed hospital with 4 treatment areas. Three physiatrists available for teaching. Write: Elizabeth Samuels, Box 846, Medical College of Virginia, Richmond, Va.

FLORIDA SOCIETY for Crippled Children seeking physical therapist to operate unit of Mobile Therapy program. Ideal for single person. Other openings in affiliated treatment centers. Contact: Mr. Lisle Reese, 515 S. Orange Ave., Orlando, Florida.

IMMEDIATE PLACEMENT for qualified staff physical therapist in 335-bed general hospital, well equipped department serving both in- and outpatients; 40-hour week, paid vacations and sick leave. Write Administrator, Lima Memorial Hospital, Lima, Ohio.

QUALIFIED PHYSICAL THERAPIST: (Female). Immediate placement in rapidly expanding orthopedic clinic. Close supervision by physiatrist; 40-hour week, vacation and sick leave benefits. Salary open. Will consider recent graduate. Apply A. F. White, M.D., Anderson Clinic, Arlington, Virginia.

PT to assume STAFF POSITION at cerebral palsy outpatient center. Expansion program starting to more than double present area. Modern ranch-style building. Caseload soon to include all pediatric disabilities. Starting salary around $4,500 depending on experience. Liberal holidays, paid vacation, sick leave, 5-day week—8:30 to 4:30. For further information contact Vincent J. Privitera, Director, Cerebral Palsy Treatment Center, 808 Crockett, Amarillo, Texas.

PHYSICAL THERAPIST for expanding department in a new 50-bed rehabilitation hospital. Newly equipped department treating polio, orthopedic, and cerebral palsy children. Three weeks' vacation, Blue Cross, and a 40-hour work week. Ideal location for advancement. Write: Administrator, Crippled Children's Hospital, 200 Henry Clay Avenue, New Orleans, La.

QUALIFIED STAFF PHYSICAL THERAPIST—interesting and progressive department with wide variety of clinic and hospital cases; opportunity for research; 5-day week; annual leave with pay; disability leave; retirement system; salary commensurate with experience and/or specialized training. Apply Office of Nonacademic Personnel, University of Illinois Research & Educational Hospitals or Dept. Physical Medicine and Rehabilitation, 840 South Wood Street, Chicago 12, Ill.

Qualified physical therapist for outpatient center for cerebral palsied children. Well equipped Center established 1950 supported by Chest. Program also includes nursery school and class for mentally retarded children. Pleasant surroundings, competent and congenial staff, opportunity to use initiative. Four week summer vacation, generous Christmas holiday, social security, sick leave, annual increments. Starting salary $3,800 minimum, more if experienced. Interview arranged at our expense. Write Miss Virginia Pettit, Executive Director, United Cerebral Palsy, 3601 Victory Parkway, Cincinnati 29, Ohio.

PHYSICAL THERAPIST

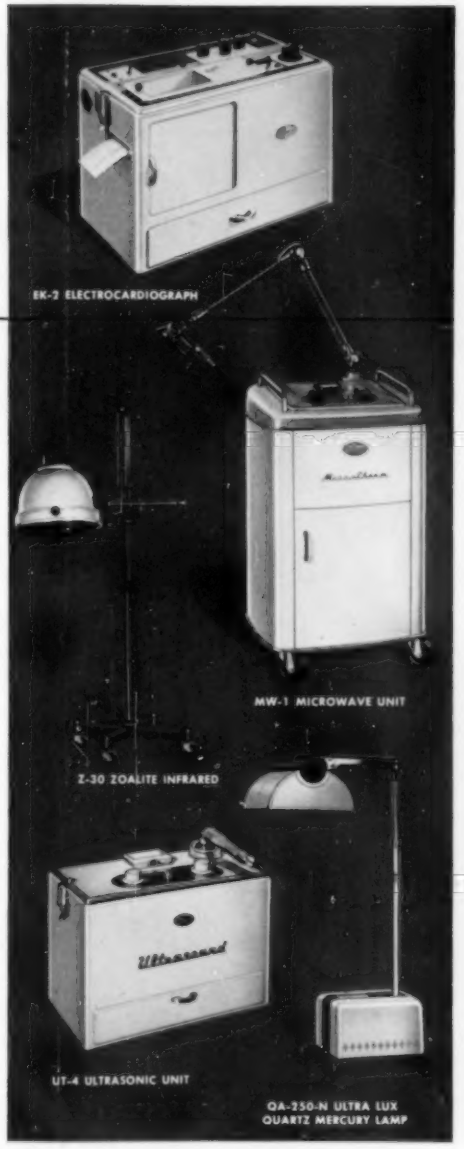
Large New England insurance company has position open for a female physical therapist.

We require a minimum of two years' experience; state license or its equivalent.

Salary according to background and experience. Minimum of $4,000 per year.

Write stating qualifications to:
P.O. Box 862, Hartford 15, Connecticut.

THE QUALITY THAT INSURES ACCURACY



Rigid standards distinguish Burdick Electro-Medical equipment. A demonstration or free trial in your office can best show the quality components and workmanship.

ELECTROCARDIOGRAPHY — The Burdick EK-2 Electrocardiograph has become a standard for accuracy. It combines ease of operation with serviceable, rugged portability.

ULTRASOUND — A new and proven therapy. Both the UT-4 portable ultrasonic unit and the UT-1 console offer simplified controls coupled with efficient power.

DIATHERMY — The MW-1 Microwave Unit brings the advantages of microwave diathermy right into your office. The MF-49 conventional short-wave model permits the use of contour applicator, induction cable, condenser pads, air-spaced and internal applicators.

INFRARED THERAPY — The Zoalite Z-30 provides sturdy clinical efficiency for the hospital or doctor. The Zoalite Z-12 has bedside portability.

ULTRAVIOLET THERAPY — The Ultra Lux Quartz Mercury Lamp (QA-250-N) offers high quality at moderate cost. The QA-450-N, Professional Special, is a higher intensity lamp on a counterbalanced stand.

ELECTROSURGERY — The Burdick SU-4 Blended Current Unit combines the cutting qualities of the vacuum tube current with the coagulating properties of the spark gap current.

Burdick®

THE BURDICK CORPORATION
Milton, Wisconsin

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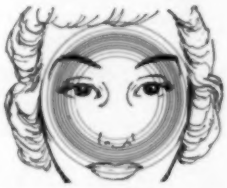
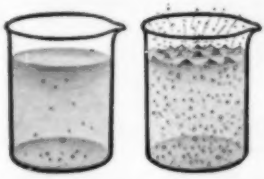
MICROWAVE DIATHERMY
versus SHORTWAVE DIATHERMY

Check these major advantages of
Raytheon MICROTHERM® Microwave Diathermy



1. **PRECISE HEATING,** precisely controlled—areas as small as the eye, as large as the back, treated in exact patterns.



2. **MORE EFFICIENT ABSORPTION** of energy — far faster than shortwave energy. Result: more thorough, efficient therapy.

3. **DEEPER HEAT PENETRATION,** with minimum surface heat—as high as 106.27° F. at two inches; subcutaneous tissue only 1° to 2° higher.

4. **FASTER, GREATER INCREASES** in blood circulation—on the order of 200% through a local area; 100% through an entire extremity.

FOR COMPLETE FACTS on the 11 major advantages of Raytheon Microtherm Microwave Diathermy, speak to your dealer. Ask for a complete office demonstration. It must satisfy your most demanding requirements.

Excellence RAYTHEON *In Electronics*

RAYTHEON MANUFACTURING COMPANY
Commercial Equipment Division—Medical Products Department
Waltham 54, Massachusetts